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The Importance of Sport Fishing to the North Mainland Coast and North Central Areas of British Columbia: An Economic Survey

by
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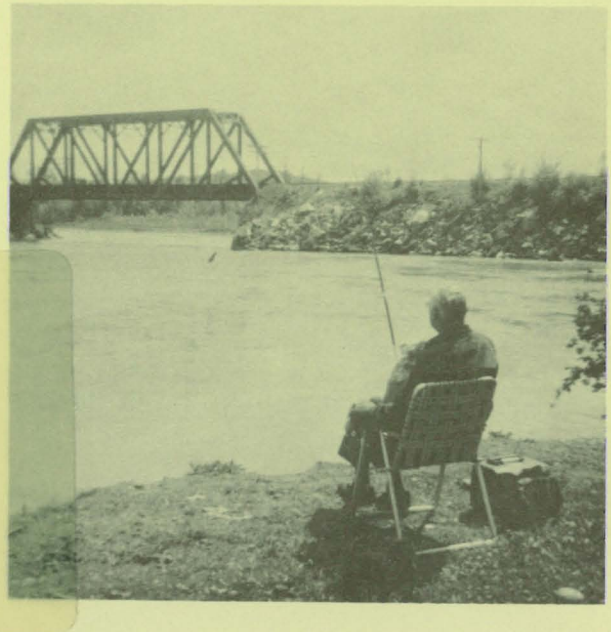

THE IMPORTANCE OF SPORT FISHING TO THE NORTH MAINLAND COAST AND NORTH CENTRAL AREAS OF BRITISH COLUMBIA: AN ECONOMIC SURVEY

by

David J. Reid

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Fisheries and Marine Service
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Pacific Region

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FOREWORD

Large-scale economic expansion is planned for North-Western British Columbia in the next ten years. Industrial development and its concomitant population growth will lean heavily on the water resources of the area. With this in mind, the Northern Operations Branch, Economics and Sociology Unit, has undertaken a series of studies in the area. The objective of these studies is to establish the values associated with recreational uses of local waterways. The present study is devoted to the sport fisheries along the Yellowhead Route between Prince George and Prince Rupert. A second study, in preparation, examines the importance of maintaining the quality of water resources in the North-West and chooses as an example Lakelse Lake near Terrace. In the planning stage are reports on the Stewart Highway and Kitimat Valley regions.

The sport fishing surveys carried out in 1972 were directed by myself. David Reid took over the field programs after joining the Fisheries and Marine Service in April 1973. He is responsible for the present report. In our efforts we were ably assisted throughout the study by various members of the economics and Sociology Unit, Northern Operations Branch Staff, especially by John Boland.

The present report describes the populations who make use of the sport fisheries of North Central and North-Western British Columbia. It also assesses the value of these regional sport fisheries. Three sub-regional fisheries are identified, namely the Nechako Lakes District, the Morice-Bulkley Valley Region and the Lower Skeena Valley Region. Each is shown to have its own unique set of qualities and problems. The question of Non-Resident use of the recreational resource is also treated at some length in the text. This, in part, is related to previous research interests of David Reid and myself published elsewhere. Finally, the

report calls for an integration of management of recreational resources into the more general regional development plans in the North. There are too many examples elsewhere on the continent where economic development has been needlessly at the expense of environmental values.

Increasing urbanisation and the tensions associated with city life, serve to increase the value of recreational resources. It is therefore important, that recreation areas be allocated and managed to provide both the proper amount and the proper variety of quality recreational experiences. Hopefully this report makes a contribution to these worthwhile objectives.

William F. Sinclair
Chief, Economics and Sociology
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Pacific Region

ACKNOWLEDGEMENTS

Many people assisted in the preparation of this report. Their contribution is sincerely acknowledged.

Peter Stent, Victor Barwin and John Boland conducted the surveys of sport fishermen and compiled the data for the study. John Boland also helped work the raw data into presentable form.

The British Columbia Provincial Government Parks Branch supplied valuable data on park attendance. Scott Gain was especially helpful in this respect. Morley Pinsent and Bob Laidlaw of the Provincial Government Fish and Wildlife Branch provided essential information and were always available to lend assistance.

Invaluable advice and criticism was provided at every stage of the report by William Sinclair. Without his dedication in revising and editing the report, its worth would be considerably less.

Brent Horsburgh edited the final drafts. Sharon Evans and Cheryl Tomlinson typed the text and tables.

Any errors and omissions remain my responsibility.

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1. INTRODUCTION

This paper reports on results obtained from surveys of sport fishermen conducted in the northern mainland coast and north central regions of British Columbia during the summers of 1972 and 1973.[1] These surveys were designed to identify the importance of recreational fishing to the regions' Resident population. To this end information is introduced on patterns of sport fishing participation and the socio-economic background of participating sport fishermen. An attempt will be made to estimate some of the values associated with recreational fishing. Residents of the region benefit from the local sport fishery in two distinct ways. First, they benefit directly through their own participation in the fishery. Second, Residents benefit because of expenditures made in the local economy by Non-Residents who take part in the local sport fishery. Thus, the data is presented in such a way as to allow comparison and contrast between Resident and Non-Resident sport fishermen.

The northern mainland coast and north central regions of British Columbia covered by this study are shown in Map 1. The area under consideration is an east-west corridor along British Columbia Highway 16, the Yellowhead Highway, between Prince George and Prince Rupert. It strides two of the major river systems of the province, the Fraser and Skeena systems. For the purposes of this report the study region has been designated, the Yellowhead Region. Within the Yellowhead Region three unique sport fisheries have been defined. These are the Nechako Lakes District, the Morice-Bulkley Valley Region and the Lower Skeena Valley Region. The boundaries of these sport fishing regions are also shown in Map 1.

The report proceeds as follows. In the three succeeding sections information is presented on the Nechako Lakes District, the Morice-Bulkley Valley Region and the Lower Skeena Valley Region sport

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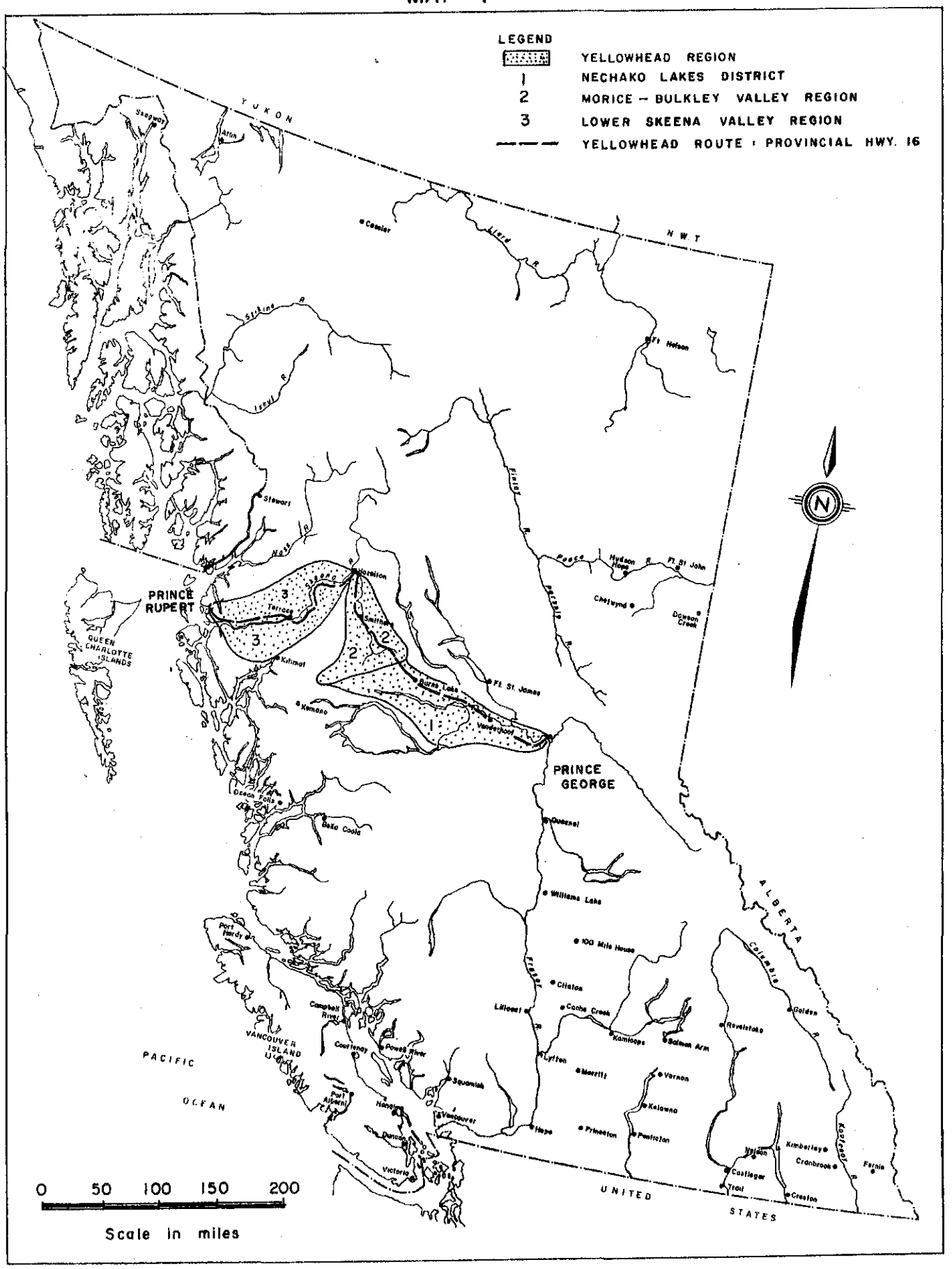
1 For details of these surveys and an example of the questionnaire used, see Appendices I and II respectively.

MAP 1



LOCATION OF YELLOWHEAD REGION IN BRITISH COLUMBIA

fisheries. Patterns of participation, socio-economic data and some estimates of economic values associated with sport fishing are presented for each sport fishery in turn. The penultimate section compares and contrasts the three sport fisheries and places each one in the context of the whole Yellowhead Region. A final section states the overall conclusions and general implications of the study.

Careful distinction is made between Residents of the Yellowhead Region, Canadians not living in the Yellowhead Region and Non-Canadians. Thus, the following terms will be applied throughout the report:[2]

1. Residents (of the Yellowhead) is the term used to identify the local population of the Yellowhead Region. The population is mainly urban and is distributed among a series of small and medium sized towns of which the largest are Prince George, Prince Rupert, Kitimat and Terrace. The Yellowhead Region contains an estimated 106,500 people.
2. The term Non-Resident Canadian refers to residents of Canada who live outside of the Yellowhead Region.
3. The term Non-Canadian is applied to residents of countries other than Canada. In actuality Non-Canadians were overwhelmingly residents of the United States.
4. Non-Residents is the collective term for all Non-Canadians and Non-Resident Canadians.

The following unit of measurement definitions are also consistently applied throughout the report:

1. A party is defined as a group of people travelling in a single vehicle.
2. A Non-Resident party-day is defined as a day or reasonable part of a day stayed in the Yellowhead Region by a Non-Resident party.
3. An angler or sport fisherman is defined as a person, regardless of

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2 All the previously defined regional terms and the residential status terms which follow are capitalised in the text.

age or sex, who had participated in or intended to participate in the sport fishery of the Yellowhead Region.

4. An angler-day is defined as a day on which an angler or sport fisherman had participated in the sport fishery, for any reasonable length of time.
5. An angler party or sport fishing party is defined to be a party containing at least one angler or sport fisherman.
6. All monetary values are defined in 1972/1973 dollars.

The fish species referred to in the text should be understood as follows:

1. Salmon refers specifically to chinook and coho salmon.
2. Trout refers to lake, brook and rainbow trout but does not include steelhead trout.
3. Steelhead trout data are always reported separately.

Other specie names are self explanatory.

The following three sections are devoted to a region by region economic survey of the sport fisheries of the Yellowhead Region. Section 2 focuses specifically on the Nechako Lakes District.

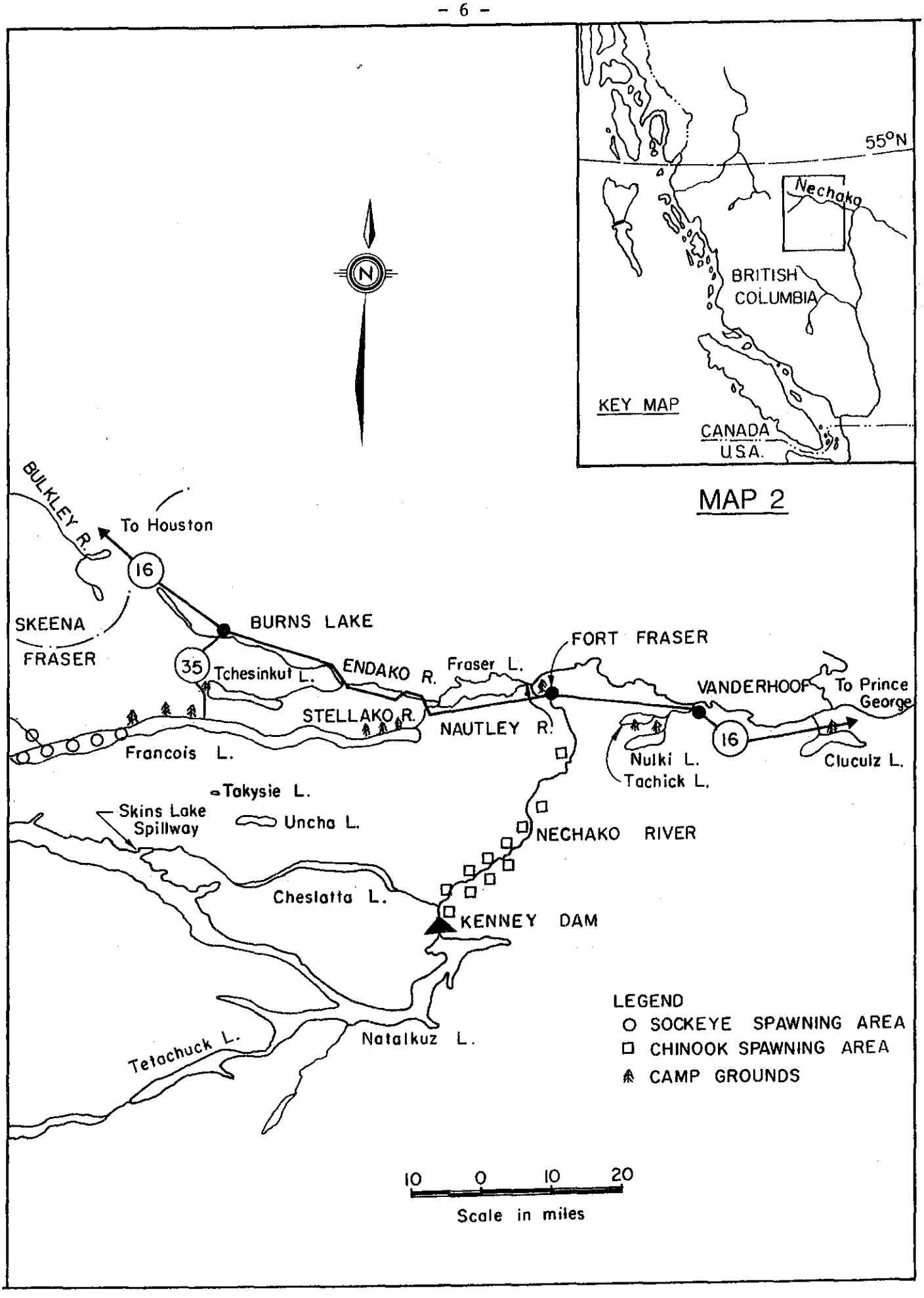
2. THE NECHAKO LAKES DISTRICT

The Nechako Lakes District, illustrated in Map 2, forms part of the Fraser River drainage system. The Nechako River drains an area of about 18,000 square miles. Next to the Thompson, it is the largest of the Fraser's tributary drainage areas. A total of 5,000 square miles lies above Kenney Dam. Below the damsite the truncated Nechako flows northeastwards to its confluence with the Nautley River. Within the Nautley tributary drainage area is a whole series of large lakes including Francois, Fraser and Tchesinkut. Below the Nautley lies a series of smaller lakes of which the most important are Nulki, Tachick and Cluculz. The major tributary to the south, the Chilako, rises in Tatuk Lake. Like the Stuart system to the north, it is excluded from the present study.

The Nechako Lakes District has a population of about 45,000 including Prince George, situated at the confluence of the Fraser and the Nechako. Prince George, population 33,101, is the centre of the lumber and pulp industry of the British Columbia interior. Vanderhoof, Burns Lake and Fraser Lake are smaller sawmilling towns. A number of Indian reserves are scattered throughout the area, the largest being located south of Vanderhoof, between Nulki and Tachick Lakes.

Table 2.1 indicates the number of Non-Resident party-days per year in the Nechako Lakes District. Out of a total of 22,407 Non-Resident party-days per year in 1972 and 1973, 71 percent of the total (15,955 party-days) could be attributed to sport fishing parties. Over 50 percent of all Non-Resident party-days were carried out by Canadians.

Table 2.2 shows the average number of persons in each sport fish party and the average number of active fishermen in each sport fish party. It can readily be seen that Non-Canadian sport fishermen travelled in much smaller parties than their Canadian counterparts. Also, a Non-



MAP 2

MAP OF THE NECHAKO LAKE DISTRICT

TABLE 2.1

NUMBER OF NON-RESIDENT PARTY-DAYS
IN THE NECHAKO LAKES DISTRICT
AVERAGE 1972, 1973

	Party Days					
	Sport Fish Parties		Non-Sport Fish Parties		All Parties	
	No.	%	No.	%	No.	%
Non-Resident Canadians	7,548	33.7	3,791	16.9	11,339	50.6
Non-Canadians	8,407	37.5	2,661	11.9	11,068	49.4
All Non-Residents	15,955	71.2	6,452	28.8	22,407	100.0

TABLE 2.2

NUMBER OF PEOPLE PER NON-RESIDENT SPORT FISH PARTY

NUMBER OF ANGLERS PER PARTY

NECHAKO LAKES DISTRICT

AVERAGE 1972, 1973

	Sport Fish Parties	
	Non-Resident Canadians	Non-Canadians
Number of people per party	3.42	2.76
Number of anglers per party	2.35	2.15
Percentage of Party Members Who Sport Fish	69%	78%

Canadian sport fishing party contained a higher proportion of anglers. The information presented in Tables 2.1 and 2.2 leads to the conclusion that over 50 percent of Non-Resident visitor days in the Nechako Lakes District could be directly associated with sport fishermen.

As shown in Table 2.3, more than 49,000 angler days of effort was carried out in the Nechako Lakes District during both 1972 and 1973. Over 70 percent of all angler-days were carried out by Residents. During the period 1972-73 total Non-Canadian fishing effort declined by 22.5 percent and Non-Resident Canadian fishing effort increased by 4 percent. The result was an overall decline of 11.5 percent in total fishing effort. It would appear that the "gasoline crisis" of early 1973 contributed to this decline.

Resident fishing effort for selected Nechako Lakes District communities is presented in Table 2.4. About 14 percent of the Prince George population actively participated in sport fishing during 1972-73. A slightly smaller percentage of Vanderhoof, Fraser Lake and Burns Lake residents participated in fishing during that period. Almost 5,200 active sport fishermen live in these four communities.

Tables 2.5, 2.6 and 2.7 show the permanent place of residence of sport fishing parties. Most Resident sport fish parties were from Prince George. Also it is shown that over half of the Non-Resident Canadians came from other parts of British Columbia and over one-third came from Alberta. Most Non-Canadian parties were from California. It also shows that between 1972 and 1973, representation became more concentrated with West Coast United States parties increasing their share from 65 to 82 percent of the total. Large declines in representation were registered in 1973 by parties originating from more distant parts.

Table 2.8 shows the distribution of angler party-days at various resort areas in the Nechako Lakes District by residence category. One of

TABLE 2.3

ANGLER EFFORT IN THE NECHAKO LAKES DISTRICT

BY RESIDENCE CATEGORY, 1972, 1973*

	Angler-Days							
	1972		1973		Average 1972-1973		Percentage Change	
	No.	%	No.	%	No.	%	+	-
Residents	40,103	71.2	35,484	71.2	37,794	71.2		-11.5
Non-Resident Canadians	6,851	12.2	7,124	14.3	6,988	13.2	+4.0	
Non-Canadians	9,347	16.6	7,246	14.5	8,297	15.6		-22.5
TOTAL	56,301	100.0	49,854	100.0	53,079	100.0		-11.5

* For derivation of total angler-days, see Appendix III.

TABLE 2.4

RESIDENT ANGLING EFFORT IN THE NECHAKO LAKES DISTRICT

BY COMMUNITY

1972, 1973

	Residents of	
	Prince George	Vanderhoof, Fraser Lake & Burns Lake**
Population*	33,101	4,204
Estimated Total Angler-Days Per Year in the Nechako Lakes District***	25,011	9,016
Angler-Days Per Angler-Year in the Nechako Lakes District****	5.4	16.2
Estimated Number of Active Anglers	4,632	557
Anglers as Percent of Total Population	14%	13%

* Canada Census, 1971.

** The data for Vanderhoof, Fraser Lake and Burns Lake has been aggregated.

*** Based on Fisheries Service survey data.

**** It was found that approximately one-third of the angling effort of Prince George residents took place in the Nechako Lakes District. This percentage was applied to the Northern British Columbia average of 16.2 angler-days per year given in Pearse-Bowden, The Value of Fresh Water Sport Fishing in British Columbia, Victoria, 1971, p. 21, Table 12. For Vanderhoof-Fraser Lake-Burns Lake anglers, the Northern British Columbia average of 16.2 angler-days was applied.

TABLE 2.5

RESIDENCE DISTRIBUTION OF RESIDENT PARTIES
IN THE NECHAKO LAKES DISTRICT
AVERAGE 1972, 1973

Residence Location	Percentage Response By Resident Parties
	%
Nechako Lakes District:	
Prince George	75
Vanderhoof	4
Fraser Lake	3
Burns Lake	2
Other	2
Sub-Total	86
Morice-Bulkley Valley:	
Houston	3
Other	1
Sub-Total	4
Lower Skeena Valley:	
Terrace	4
Kitimat	3
Prince Rupert	3
Sub-Total	10
ALL AREAS	100

TABLE 2.6

RESIDENCE DISTRIBUTION OF NON-RESIDENT CANADIAN PARTIES
IN THE NECHAKO LAKES DISTRICT
AVERAGE 1972, 1973

Residence Location	Percentage Response By Non-Resident Canadian Parties
	%
British Columbia	55
Alberta	37
Ontario	5
Manitoba-Saskatchewan	2
Quebec-Maritimes	1
TOTAL	100

TABLE 2.7

RESIDENCE DISTRIBUTION OF NON-CANADIAN PARTIES IN THE NECHAKO LAKES DISTRICT, 1972, 1973

	Percentage Response By Non-Canadian Parties		
Residence Location	1972	1973	Average
	%	%	%
West Coast:			
California	43	51	
Washington	16	22	
Oregon	6	9	
Sub-Total	65	82	73
Mountain:			
Idaho	4	-	
Montana	2	-	
Other	6	10	
Sub-Total	12	10	11
Mid-West:			
Michigan	2	3	
Other	8	1	
Sub-Total	10	4	7
South:			
Texas	4	1	
Florida	2	3	
Other	1	-	
Sub-Total	7	4	6
East Coast:	4	-	2
Alaska:	1	-	1
TOTAL	100	100	100

TABLE 2.8

REPRESENTATION OF SPORT FISH PARTIES
AT SELECTED RESORT AREAS IN THE
NECHAKO LAKES DISTRICT BY RESIDENTIAL STATUS
AVERAGE 1972, 1973

Resort Area	Percentage of Sport Fish Party-Days			
	Residents	Non-Resident Canadians	Non-Canadians	Total
	%	%	%	%
Francois Lake:				
(a) East End	40.0	34.3	25.7	100.0
(b) West End	23.5	16.5	60.0	100.0
Fraser Lake	39.2	33.5	27.3	100.0
Uncha-Takysie-Tchesinkut	42.0	19.0	39.0	100.0
Cluculz Lake	91.0	7.5	1.5	100.0
Nulki-Tachick	57.3	10.9	31.8	100.0
All Nechako Lakes District	36.2	39.9	23.9	100.0

the most notable features of this table is the high Resident participation at Cluculz Lake and in the Nulki-Tachick Lakes area. A high Non-Resident Canadian participation at Fraser Lake and at the east end of Francois Lake can also be identified. Non-Canadians were most heavily represented at the west end of Francois Lake.

Employment classification of sport fishermen in the Nechako Lakes District is reported in Table 2.9. Over half the Non-Canadians were retired and over one-third of the remainder were classified as professionals. Over half of all Residents and approximately 45 percent of all Non-Resident Canadians were employed in the technical-tradesmen or labourer categories.

In Table 2.10, the lakes and rivers of the Nechako Lakes District are ranked by the reported amount of effort in angler-days in 1972 and 1973. Francois Lake dominated the picture for all groups but was relatively much less important for Canadians. Nulki Lake rated more than 10 percent of the total fishing effort. Cluculz Lake reported 20 percent of Resident effort and the Stellako River recorded 10 percent of Non-Resident Canadian effort. All other locations reported less than 10 percent of fishing effort for all groups.

Table 2.11 indicates preferred species by residence category and Table 2.12 identifies the type of fishing most frequently participated in by Nechako Lakes District sport fishermen. Over 80 percent of all sport fish parties in the Nechako Lakes District preferred trout over other species. A further 7 percent preferred to catch char during their stay in the region. The majority of sport fishermen were engaged in fishing local lakes from small boats.

Estimated total sport fishing effort on Nechako Lakes District trout stocks is shown in Table 2.13. While these figures are not considered totally reliable (partly because it is a sport fisherman's prerogative to exaggerate) the pattern of catch per unit of effort is probably

TABLE 2.9

EMPLOYMENT STATUS OF SPORT FISHERMEN
IN THE NECHAKO LAKES DISTRICT
BY RESIDENCE CATEGORY
AVERAGE 1972, 1973

	Percentage Response By		
Employment Status	Residents	Non-Resident Canadians	Non-Canadians
	%	%	%
Executive-Managerial	14.3	13.8	7.7
Professional	7.8	13.8	17.9
Technical-Tradesmen	37.6	30.8	6.4
Clerical-Sales	7.8	6.2	3.8
Labourer	14.3	7.7	1.3
Self-Employed	14.3	13.8	9.0
Retired	2.6	10.8	52.6
Unclassified	1.3	3.1	1.3
TOTAL	100.0	100.0	100.0

TABLE 2.10

ANGLER EFFORT ON SELECTED STREAMS AND LAKES*
OF THE NECHAKO LAKES DISTRICT
BY RESIDENCE CATEGORY
1972, 1973

Fishing Location	Angler-Days Reported by Surveyed Parties							
	Residents		Non-Resident Canadians		Non-Canadians		All Categories	
Francois Lake	440	42.0	228	56.3	881	70.9	1549	57.4
Nulki Lake	129	12.3	34	8.4	182	14.7	350	13.0
Cluculz Lake	210	20.1	27	6.6	1	0.1	238	8.8
Fraser Lake	88	8.4	26	6.4	22	1.8	136	5.0
Tachick Lake	80	7.6	16	4.0	33	2.7	129	4.8
Tchesinkut Lake	41	3.9	22	5.4	53	4.2	116	4.3
Takysie Lake	30	2.9	12	3.0	52	4.2	94	3.5
Stellako River	29	2.8	40	10.0	17	1.3	86	3.2
	1047	100.0	405	100.0	1241	100.0	2698	100.0

* These are the most heavily fished streams and lakes in the Nechako Lakes District.

TABLE 2.11

PREFERRED SPECIES BY RESIDENCE CATEGORY
IN THE NECHAKO LAKES DISTRICT
1972, 1973

Species	Percentage Response By			
	Residents	Non-Resident Canadians	Non-Canadians	All Categories
	%	%	%	%
Trout	81	73	90	82
Char	8	7	4	7
Kokanee	1	5	2	2
Salmon	5	10	1	5
Other	2	1	1	1
No Preference	3	4	2	3
TOTAL	100	100	100	100

TABLE 2.12

TYPE OF FISHING ON TRIP BY PERCENTAGE OF TIMES MENTIONED
BY NECHAKO LAKES DISTRICT PARTIES
AVERAGE 1972, 1973

Type of Fishing	Percentage of Times Mentioned By		
	Residents	Non-Resident Canadians	Non-Canadians
	%	%	%
Lake:			
Boat	86	64	69
Shoreline	6	3	6
River:			
Boat	-	-	-
Shoreline	8	33	25
TOTAL	100	100	100

TABLE 2.13

SPORT FISHING EFFORT ON NECHAKO LAKES DISTRICT TROUT STOCKS
TOTAL TROUT CATCH AND CATCH PER ANGLER-DAY
AVERAGE 1972, 1973

	Trout Angler-Days	Trout Catch	Catch Per Angler-Day
Residents	32,483	97,774	3.01
Non-Resident Canadians	5,870	15,262	2.60
Non-Canadians	7,301	28,036	3.84
TOTAL	45,654	141,072	3.09

3.09
1/3

quite accurate. Non-Canadians were the most successful trout anglers in this region. Resident catch figures were relatively low presumably because of a heavy concentration of effort on the lakes immediately west of Prince George. Non-Resident Canadians were the least successful group of trout fishermen. In 1972 and 1973 an average of 141,072 trout and 10,000 fish of other species, mainly kokanee and char were taken from the Nechako Lakes District.

Table 2.14 indicates the importance of sport fishing opportunities in attracting Non-Residents to the Nechako Lakes District in 1972-73. It shows that about 36 percent of Non-Canadians would not have taken their vacation in the area had there been no sport fishing opportunities. More than 27 percent would have cut short their trip. Non-Resident Canadians would have been slightly more inclined to substitute other activities.

Table 2.15 details expenditure estimates of Non-Resident sport fish parties visiting the Nechako Lakes District in 1972 and 1973. Non-Canadians reported higher spending in the area than Non-Resident Canadians. In total, Non-Canadian expenditures attributable to the existence of the sport fishery amounted to $141,581. This was almost two and a half times greater than Non-Resident Canadians' attributable expenditures.

A better understanding of what these expenditures imply can be gained by knowing that the total Non-Resident expenditures attributable to the sport fishery ($201,247) may or may not precisely indicate how much Residents benefit from Non-Resident fishing. Total expenditures have to be reduced by the amount of factor payments which could be earned elsewhere in the local economy through a reallocation of resources employed presently in the sport fishery. However, given the size of the region under discussion and the specialized nature of the resources employed in the sport fishing service sector, if there had been no sport fishery in the Nechako Lakes District, then it could be argued that the labour and capital, which serviced Non-Resident sport fishermen, would have been

TABLE 2.14

IMPACT OF SPORT FISHING OPPORTUNITIES
ON LENGTH OF NECHAKO LAKES DISTRICT TRIP
AVERAGE 1972, 1973

In the Absence of Sport Fishing Opportunities:	Percentage Response By Sport Fish Parties	
	Non-Resident Canadians	Non-Canadians
	%	%
(a) Party Would Not Have Made Trip	36.5	36.0
(b) Party Would Have Cut Trip Short	21.0	27.5
(c) Party Would Have Substituted Other Activities	42.5	36.5
TOTAL	100.0	100.0

TABLE 2.15

TOTAL AND AVERAGE NON-RESIDENT EXPENDITURES
IN THE NECHAKO LAKES DISTRICT
AVERAGE 1972, 1973

Expenditure	Expenditures of Non-Resident Canadians	Expenditures of Non-Canadians
	$	$
Per Party-Day on Trip	17.80	23.45
Per Angler-Day	19.75	23.65
Total All Sport Fish Parties	138,942.00	194,290.00
Total Attributable to Sport Fishing*	59,666.00	141,581.00

* For derivation of attributable expenditures, see Appendix IV.

unemployed or forced to move away from the region. For the purposes of this study, then, the value of Non-Resident sport fishing in the Nechako Lakes District to local Residents, is assumed to be the present value of the future stream of local income components accruing from Non-Resident attributable expenditures. The present value of Non-Resident sport fishing to Residents of the Nechako Lakes District was estimated to be $1.34 million.[1]

It was also estimated that total Non-Resident expenditures created 19 full-time or 57 seasonal (four month) jobs per year. Seventy percent of this employment was provided by Non-Canadians. Average annual business revenues in the Nechako Lakes District generated by Non-Resident angler parties' attributable expenditures amounted to $281,900.[2] A survey of establishments conducted in 1972 and 1973 indicated that 22 establishments were directly dependent on sport fishing.

Summary

The Nechako Lakes District can be divided into two sub-regions. The area below Vanderhoof does not appear to attract many visitors. The several lakes most notably Cluculz, provide poor fishing and cater mainly to Prince George people. The Nechako itself has its salmon runs protected for the commercial fishery and does not seem to be popular among sport fishermen. In this stretch, tourist traffic consists mainly of stopovers by parties headed elsewhere. Above Vanderhoof, in the Nautley-Francois tributary area, the picture changes considerably. The countryside becomes more varied and pastoral, broken up by a series of large lakes. The area is a paradise for anglers and provides a major attraction for visiting sport fishermen.

The Nechako Lakes District attracted an average of 22,407 Non-Resident party-days in 1972 and 1973. Of these, 15,955 party-days per

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1 Present value is calculated to the year 1999 using a discount rate of 8 percent. For details of the calculations involved see Appendix V.

2 For derivation of these results, see Appendix VI.

year could be classified as sport fish party-days.

The lakes and streams of the area supported an average effort of 53,079 angler-days in 1972 and 1973. Non-Residents accounted for 29 percent of total angler effort. The division of effort between Non-Resident Canadians and Non-Canadians showed a balance in favour of Non-Canadians. Angler effort in the Nechako Lakes District fell between 1972 and 1973.

Of all Non-Resident visitors just over half actively participated in the local sport fishery. Around 14 percent of Residents living in Prince George and 13 percent of Residents living in Vanderhoof, Fraser Lake and Burns Lake actively participated in the sport fishery.

The Nechako Lakes District attracted visitors from all over North America. Californians were by far the largest Non-Canadian group represented. There was a notable geographical separation of sport fishermen within the Nechako Lakes District on the basis of residence category. Most Non-Canadian visitors were retired.

The majority of sport fishermen fished the lakes of the area from small boats and were interested in catching trout. Francois Lake was the most heavily fished lake in the area. Non-Resident Canadian parties had the lowest catch success of all sport fishing parties and would have been more inclined to substitute other activities in the absence of sport fishing opportunities.

Of total tourist spending in the Nechako Lakes District, $333,232 was contributed by sport fish parties and $201,247 was directly attributable to sport fishing. Non-Resident expenditures attributable to sport fishing generated the equivalent of 19 full-time jobs in the Nechako area per year in 1972 and 1973. Non-Canadian expenditures provided 13 of these jobs. Annual business revenues generated in the Nechako

Lakes District by Non-Resident angler party expenditures amounted to $281,900 per year in 1972 and 1973. Finally, the present value of Non-Resident sport fishing activity to residents of the Nechako Lakes District was calculated to be $1.34 million.

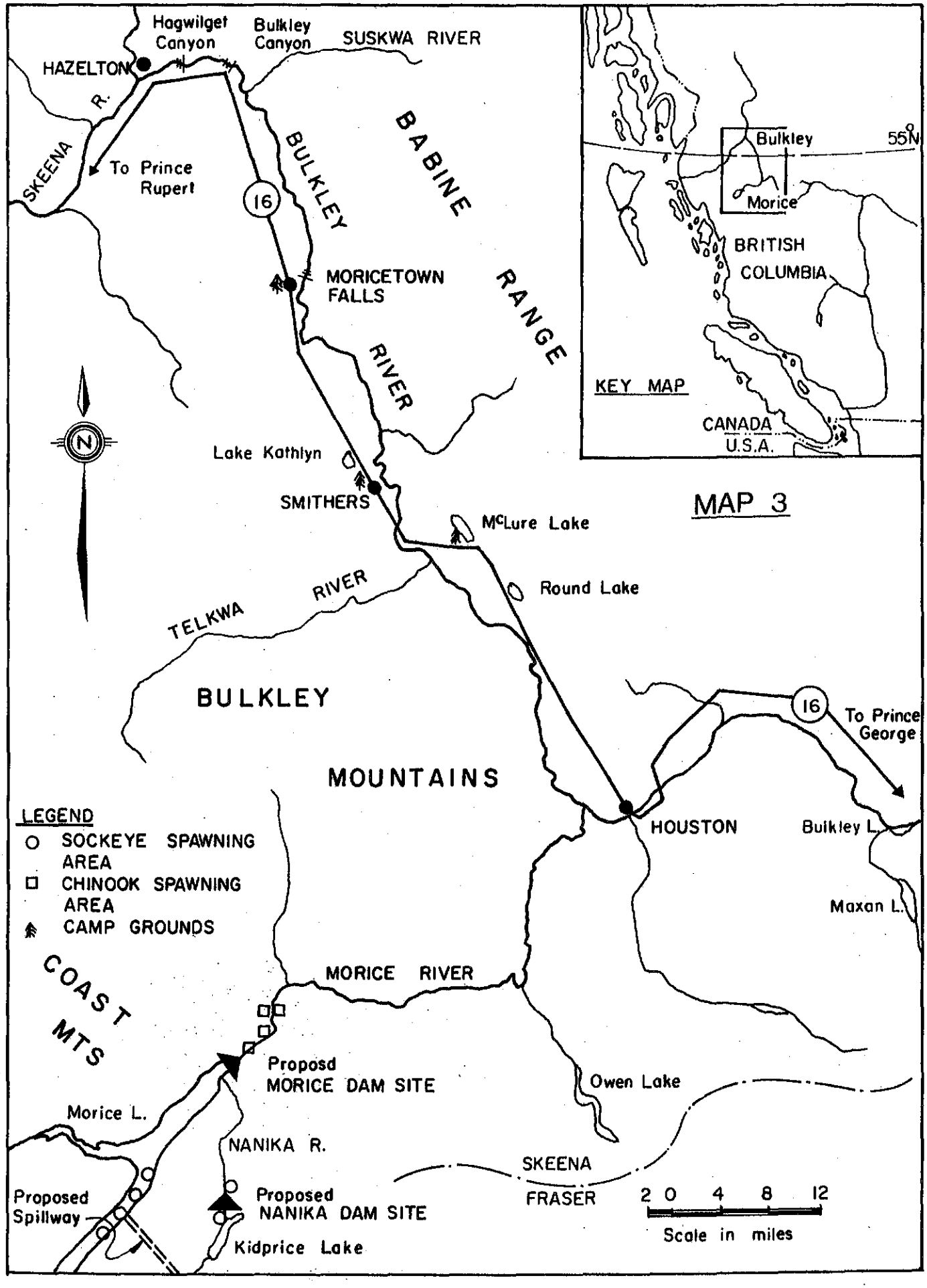
3. THE MORICE-BULKLEY VALLEY REGION

The Bulkley River, along with its main branch the Morice, is a major tributary of the Skeena. It drains 4,500 square miles of west central British Columbia. The watershed is formed in the west by the Coast and Bulkley Mountains, and in the east by the Babine Range. The Morice-Bulkley Valley Region is shown in Map 3. This section is devoted to an examination and evaluation of the Morice-Bulkley Valley Region sport fishery.

The Morice-Bulkley Valley Region has a population of about 11,500 people. Smithers, situated in the centre of the valley, has a population of just under 4,000 and is the largest town in the area. The town is a service centre for the region's forest, mining and agricultural industries and provides air and rail links with the rest of the province. Houston, population 2,232, servicing the upper Bulkley Valley and the more remote Morice Valley, is also a major sawmilling town. There is a significant concentration of Indian people in the Moricetown area.

The Morice-Bulkley Valley offers a great number of recreational opportunities. The area is scenically very attractive, and is of great geological interest. Apart from the molybdenum and copper deposits, which provide a major source of local employment, there is also an abundance of fossil beds. The Indian village of Moricetown with its unique food fishery at Moricetown Falls is of great cultural interest. For the hunter the region is teeming with a variety of game. However, perhaps the most important attraction of all is the sport fishery. There is good trolling for rainbow, cutthroat and lake trout on the lakes and famous runs of chinook and coho salmon. But above all, the rivers are very highly prized for their late summer and fall steelhead run.

Table 3.1 shows the average number of Non-Resident sport fish party-days and the total number of Non-Resident party-days spent in the



MAP OF THE MORICE – BULKLEY VALLEY REGION

TABLE 3.1

NUMBER OF NON-RESIDENT PARTY-DAYS
IN THE MORICE BULKLEY VALLEY REGION
AVERAGE 1972, 1973

	Party-Days					
	Sport Fish Parties		Non-Sport Fish Parties		All Parties	
	No.	%	No.	%	No.	%
Non-Resident Canadians	3,422	42.2	1,633	20.1	5,055	62.3
Non-Canadians	1,944	23.9	1,119	13.8	3,063	37.7
All Non-Residents	5,366	66.1	2,752	33.9	8,118	100.0

Morice-Bulkley Valley Region during 1972 and 1973. Non-Resident parties stayed an average of 8,118 days in the area. Out of the total number of party-days, approximately two-thirds (5,366 party-days) could be attributed to sport fishing. Canadians accounted for over 60 percent of total Non-Resident sport fishing party-days.

Table 3.2 shows the average number of persons in each sport fish party and the average number of active fishermen in each sport fish party. Non-Canadians travelled in smaller parties than Non-Resident Canadians. Approximately 70 percent of the members of these parties actively participated in the sport fishery. The information presented in Tables 3.1 and 3.2 indicates that sport fishermen accounted for approximately 46 percent of all Non-Resident days in the Morice-Bulkley Valley Region.

The distribution of fishing effort by species and residence category is given in Table 3.3. Morice-Bulkley Valley Region steelhead stocks supported an average of 11,051 angler-days while salmon and trout stocks together supported an average of 13,368 angler-days. Residents accounted for just over two-thirds of the total angler effort. Non-Resident Canadian effort was almost twice as great as Non-Canadian effort. During the period covered by this study, total effort in the summer salmon and trout sport fishery increased by over 28 percent. Despite this overall increase, Non-Canadian effort declined by 27.7 percent. The steelhead fishery experienced a decline of 3.7 percent in this same period.

Table 3.4 details the extent of Resident angling effort in the Morice-Bulkley Valley Region communities of Smithers, Houston and Telkwa. Approximately 975 sport fishermen in these three towns, or about 14 percent of the population, participated in sport fishing.

Tables 3.5, 3.6 and 3.7 show the permanent place of residence of sport fishing parties. Two-thirds of Resident parties came from Smithers, Prince George and Houston. Over one-half of Non-Resident

TABLE 3.2

NUMBER OF PEOPLE PER NON-RESIDENT SPORT FISH PARTY

NUMBER OF ANGLERS PER PARTY

MORICE-BULKLEY VALLEY REGION

AVERAGE 1972, 1973

	Sport Fish Parties	
	Non-Resident Canadians	Non-Canadians
Number of people per party	3.59	3.08
Number of anglers per party	2.51	2.14
Percentage of Party Members Who Sport Fish	70%	69%

TABLE 3.3

ANGLER EFFORT IN THE MORICE-BULKLEY VALLEY REGION
BY RESIDENCE CATEGORY. SALMON & TROUT 1972, 1973. STEELHEAD 1971-72, 1972-73

Salmon and Trout Angler-Days*

	1972		1973		Average 1972-1973		Percentage Change	
	No.	%	No.	%	No.	%	+	-
Residents	7,745	66.2	11,047	73.5	9,396	70.3	+42.6	
Non-Resident Canadians	2,257	19.3	2,750	18.3	2,504	18.7	+21.8	
Non-Canadians	1,704	14.6	1,232	8.2	1,468	11.0		-27.7
TOTAL	11,706	100.0	15,029	100.0	13,368	100.0	+28.4	

Steelhead Angler-Days**

	1971-72		1972-73		Average 1971-72 1972-73		Percentage Change	
	No.	%	No.	%	No.	%	+	-
Residents	7,436	66.1	7,555	69.7	7,496	67.8	+1.6	
Non-Resident Canadians	2,671	23.7	2,096	19.3	2,384	21.6		-21.5
Non-Canadians	1,150	10.2	1,191	11.0	1,171	10.6	+3.6	
TOTAL	11,257	100.0	10,842	100.0	11,051	100.0		- 3.7

* Source: Fisheries Service Survey 1972, 1973.

** Source: Steelhead Harvest Analysis, 1971-72, 1972-73.

TABLE 3.4

RESIDENT ANGLING EFFORT
IN THE MORICE-BULKLEY VALLEY REGION
1972, 1973

	Residents of Smithers, Telkwa and Houston**
Population*	6,808
Estimated Total Angler-Days Per Year in the Morice-Bulkley Valley Region***	14,228
Angler-Days Per Angler-Year in the Morice-Bulkley Valley Region****	14.6
Estimated Number of Active Anglers	975
Anglers as Percent of Total Population	14%

* Canada Census, 1971.

** The data for Smithers, Telkwa and Houston has been aggregated.

*** Based on Fisheries Service survey data.

**** It was found that approximately 90 percent of Morice-Bulkley Valley Region residents' sport fishing effort took place in the Morice-Bulkley Valley Region. (Most of the remaining 10 percent took place on Babine Lake) The percentage was applied to the Northern British Columbia average of 16.2 angler-days per year as reported by Pearse-Bowden in The Value of Fresh Water Sport Fishing in British Columbia, Victoria, 1971, p. 21.

TABLE 3.5

RESIDENCE DISTRIBUTION OF RESIDENT PARTIES
IN THE MORICE-BULKLEY VALLEY REGION
AVERAGE 1972, 1973

Residence Location	Percentage Response By Resident Parties
	%
Morice-Bulkley Valley:	
Smithers	31
Houston	11
Telkwa	3
Other	1
Sub-Total	46
Nechako Lakes District:	
Prince George	29
Burns Lake	3
Other	4
Sub-Total	36
Lower Skeena Valley:	
Prince Rupert	7
Kitimat	7
Terrace	4
Sub-Total	18
ALL AREAS	100

TABLE 3.6

RESIDENCE DISTRIBUTION OF NON-RESIDENT CANADIAN PARTIES
IN THE MORICE-BULKLEY VALLEY REGION
AVERAGE 1972, 1973

Residence Location	Percentage Response By Non-Resident Canadian Parties
	%
British Columbia	54
Alberta	36
Ontario	6
Manitoba-Saskatchewan	2
Quebec-Maritimes	1
Yukon Territory	1
TOTAL	100

TABLE 3.7

RESIDENCE DISTRIBUTION OF NON-CANADIAN PARTIES IN THE MORICE-BULKLEY VALLEY REGION, 1972, 1973

	Percentage Response by Non-Canadian Parties		
Residence Location	1972	1973	Average
West Coast:	%	%	%
California	39	21	
Washington	12	28	
Oregon	5	7	
Sub-Total	56	56	56
Mountain:			
Idaho	2	7	
Montana	5	-	
Other	5	21	
Sub-Total	12	28	20
Mid-West:			
Michigan	2	4	
Other	9	-	
Sub-Total	11	4	8
South:			
Texas	5	4	
Other	9	4	
Sub-Total	14	8	11
East Coast:	7	4	5
TOTAL	100	100	100

Canadians lived in other parts of British Columbia; more than one-third came from Alberta. An average of 56 percent of all Non-Canadian visitors came from the West Coast of the United States. Representation from the closest United States' regions, namely West Coast - Mountain States, increased from 68 to 84 percent between 1972 and 1973.

Employment classification of sport fishermen is reported in Table 3.8. Over one-third of Non-Canadians and over one-fifth of Non-Resident Canadians were retired. More than a third of Residents identified themselves as labourers. Between 20 and 30 percent of sport fishermen in all residence categories were classified as technical-tradesmen.

In Table 3.9 angler effort in the summer sport fishery is reported by fishing location and residence category. The Bulkley River was the most popular fishing location for all groups - especially Non-Canadians. The Morice River ranked second for all groups but was relatively much more important for Canadians.

Table 3.10 shows the distribution of steelhead angler effort in 1971-72 and 1972-73. The Bulkley River with 55 percent of the total angler-days, accounted for most of the angler effort. The Morice River was second with 42 percent. However, the table also shows that Non-Canadian steelheaders spent most of their fishing days on the Morice River.

Table 3.11 cross-classifies sport fishing parties by residence category and preferred species. Thirty-seven percent of all sport fishermen preferred to catch salmon. Salmon was the first choice among all residence categories. Steelhead was equally popular among Residents and also very popular with Non-Resident Canadians. Breaking residence categories into sub-regions we can see that over 50 percent of Albertans and U. S. residents from the Mountain and Southern States were salmon fishermen. Steelhead trout was favoured by 40 percent or more of fishermen from the B. C. Lower Mainland and U. S. Mountain States. Trout was favoured by over 25 percent of the anglers in the U. S. West Coast and

TABLE 3.8

EMPLOYMENT STATUS OF SPORT FISHERMEN IN THE MORICE-BULKLEY VALLEY REGION BY RESIDENCE CATEGORY. AVERAGE 1972, 1973

Employment Status	Percentage Response By		
	Residents	Non-Resident Canadians	Non-Canadians
	%	%	%
Executive-Managerial	6.7	12.5	-
Professional	3.3	20.0	17.8
Technical-Tradesmen	26.7	22.5	28.6
Clerical-Sales	6.7	7.5	3.6
Labourer	36.7	10.0	3.6
Self-Employed	18.3	2.5	3.6
Retired	1.6	22.5	35.7
Unclassified	-	2.5	7.1
TOTAL	100.0	100.0	100.0

TABLE 3.9

ANGLER EFFORT ON SELECTED STREAMS AND LAKES*
OF THE MORICE-BULKLEY VALLEY REGION
BY RESIDENCE CATEGORY, SUMMER 1972, 1973

Fishing Location	Residents		Non-Resident Canadians		Non-Canadians		All Categories	
	No.	%	No.	%	No.	%	No.	%
Bulkley River	476	56.0	170	55.0	94	73.0	740	57.7
Morice River	275	33.0	101	32.0	13	10.0	389	30.3
Morice Lake	51	6.0	18	6.0	4	3.0	73	5.7
McClure Lake	22	3.0	8	3.0	11	9.0	41	3.2
Owen Lake	19	2.0	14	5.0	7	5.0	40	3.1
TOTAL	843	100.0	311	100.0	129	100.0	1283	100.0

* These are the most heavily fished streams and lakes of the Morice-Bulkley Valley Region.

TABLE 3.10

STEELHEAD ANGLER-DAYS IN THE MORICE-BULKLEY VALLEY REGION
BY RESIDENCE CATEGORY. AVERAGE 1971-72, 1972-73*

	Estimated Steelhead Angler-Days On The									
	Bulkley River		Morice River		Suskwa River		Other Rivers		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Residents**	4,247	39	3,030	27	143	1	76	1	7,496	68
Non-Resident Canadians	1,428	13	882	8	27	-	47	-	2,384	21
Non-Canadians	432	4	683	6	47	1	9	-	1,171	11
TOTAL	6,107	55	4,595	42	217	2	132	1	11,051	100

* Source: Steelhead Harvest Analysis, Province of British Columbia, Fish and Wildlife Branch, Victoria, B. C. 1971-72, 1972-73.

** Residents defined, as per Steelhead Harvest Analysis, ibid., to include residents of Northern Interior and Upper Mainland Coast statistical areas.

TABLE 3.11

PREFERRED SPECIES BY RESIDENCE CATEGORY
IN THE MORICE-BULKLEY VALLEY REGION
1972, 1973

Residence Category	Percentage Who Preferred				
	Salmon	Trout	Steelhead	No Preference	All Parties
	%	%	%	%	%
Residents	31	24	31	13	100
Non-Resident Canadians					
Alberta	56	15	16	13	100
B.C. Lower Mainland	24	24	40	12	100
B.C. Non-Lower Mainland	34	6	51	9	100
All Non-Resident Canadians	41	14	33	12	100
Non-Canadians					
U.S. West Coast	40	26	20	14	100
U.S. Mountain	50	7	43	-	100
U.S. Mid-West	33	33	16	16	100
U.S. South	78	-	22	-	100
All Non-Canadians	46	25	18	12	100
ALL CATEGORIES	37	21	30	13	100

Mid-West categories.

Table 3.12 shows the species most sought after by Morice-Bulkley Valley Region sport fishermen. Most sport fishermen were interested in catching salmon. Over one-third of Non-Canadians indicated an interest in trout fishing.

The type of fishing most frequently participated in is indicated in Table 3.13. As would be expected from the foregoing discussion of preferred species, most Non-Resident Canadians mentioned that they were fishing shoreline on the rivers. Non-Canadians followed a similar pattern, but a relatively large number also mentioned that they had fished the local lakes.

Salmon and trout catch per angler-day, total catch and total effort are set out in Tables 3.14 and 3.15. Non-Canadians were the most successful salmon fishermen. Residents had most success at trout fishing. Non-Resident Canadians had the least catch success. An average of 1,821 salmon and 19,998 trout were taken from the Morice-Bulkley system during 1972 and 1973. While these totals are not considered exact, the fishing patterns which they describe are probably fairly accurate. If this is so, one thing is clear. The sport fishing effort on Morice-Bulkley salmon stocks is much higher than previously realised.[1]

Table 3.16 presents catch per angler-day, total catch and total effort for Morice-Bulkley steelhead stocks. The fishery supported 11,051 angler-days effort and yielded a catch of just under 3,000 steelhead.

In Table 3.17 the major steelhead rivers of British Columbia

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1 In a report by Kussat and Peterson (An Assessment of the Effects on the Morice and Bulkley River Systems of a Pulp Mill at Houston, B. C., Fisheries and Marine Service, Vancouver, 1972.) an estimate is given of 500 Morice-Bulkley chinook taken in the sport fishery. The present study revises this figure upwards by an order of magnitude of four times. The latter figure tends to be corroborated by data kept by the Fisheries Guardian at Moricetown, who has estimated in some recent years a sport fish catch of about 800 - 900 chinook annually at Moricetown alone.

TABLE 3.12

SPECIES MOST SOUGHT AFTER
IN THE MORICE-BULKLEY VALLEY REGION
AVERAGE, SUMMER 1972, 1973

Species	Percentage Response By		
	Residents	Non-Resident Canadians	Non-Canadians
	%	%	%
Salmon	47	50	43
Trout	28	30	34
Steelhead Trout	13	7	12
No Preference	12	13	10
TOTAL	100	100	100

TABLE 3.13

TYPE OF FISHING ON TRIP BY PERCENTAGE OF TIMES MENTIONED BY MORICE-BULKLEY VALLEY REGION PARTIES AVERAGE 1972, 1973

Type of Fishing	Percentage of Times Mentioned By		
	Residents	Non-Resident Canadians	Non-Canadians
	%	%	%
Lake:			
Boat	26	30	35
Shoreline	-	2	5
River:			
Boat	1	6	-
Shoreline	72	62	60
TOTAL	100	100	100

TABLE 3.14

SPORT FISHING EFFORT
ON MORICE-BULKLEY VALLEY REGION SALMON STOCKS
TOTAL SALMON CATCH AND CATCH PER ANGLER-DAY
AVERAGE 1972, 1973

	Salmon Angler-Days	Salmon Catch*	Catch Per Angler-Day
Residents	5,888	824	.14
Non-Resident Canadians	1,565	407	.26
Non-Canadians	820	590	.72
TOTAL	8,273	1,821	.22

* Somewhat over two-thirds of this catch was reported at one fishing location, namely Moricetown on the Bulkley River. Over two-thirds of the total catch was chinook, and the remainder coho.

TABLE 3.15

SPORT FISHING EFFORT
ON MORICE-BULKLEY VALLEY REGION TROUT STOCKS*
TOTAL TROUT CATCH AND CATCH PER ANGLER-DAY
AVERAGE 1972, 1973

	Trout Angler-Days	Trout Catch	Catch Per Angler-Day
Residents	3,508	15,505	4.42
Non-Resident Canadians	939	2,413	2.57
Non-Canadians	648	2,080	3.21
TOTAL	5,095	19,998	3.93

* Excludes steelhead trout, given separately in Table 3.14.

TABLE 3.16

SPORT FISHING EFFORT
ON MORICE-BULKLEY VALLEY REGION STEELHEAD STOCKS
TOTAL STEELHEAD CATCH AND CATCH PER ANGLER-DAY
AVERAGE 1971-72, 1972-73

	Steelhead Angler-Days	Steelhead Catch	Catch Per Angler-Day
Residents	7,496	1,985	.26
Non-Resident Canadians	2,384	616	.26
Non-Canadians	1,171	324	.28
TOTAL	11,051	2,925	.26

TABLE 3.17

MAJOR STEELHEAD RIVERS OF BRITISH COLUMBIA RECORDING OVER 1,000 ANGLER-DAYS PER YEAR RANKED BY CATCH (INCLUDING CATCH AND RELEASE) PER ANGLER-DAY AVERAGE 1970-71, 1971-72, 1972-73

River	Catch Per Angler-Day	Rank in British Columbia
Dean	1.57	1
Yakoun (Queen Charlotte Is.)	.97	2
Babine	.94	3
Gold (Vancouver Is.)	.64	4
Salmon (Vancouver Is.)	.60	5
Bella Coola	.56	6
MORICE	.52	7
Zymoetz	.49	8
Little Qualicum (Vancouver Is.)	.46	9
BULKLEY	.42	10

Source: Steelhead Harvest Analysis, Province of British Columbia, Fish and Wildlife Branch, Victoria, B. C., 1970-71, 1971-72, 1972-73.

are ranked for the years 1970-71 through 1972-73 on the basis of catch per angler-day. Both the Morice and the Bulkley featured in the top ten. The Morice ranked seventh and the Bulkley tenth.

Table 3.18 indicates the importance of sport fishing opportunities in attracting Non-Residents to the Morice-Bulkley Valley Region in 1972-73. Most Non-Resident Canadian sport fishing parties would have substituted other activities if sport fishing had not been available locally. In contrast, 60.5 percent of Non-Canadians either would have cut their stay short or would not have visited the region.

Table 3.19 shows how a decline in party-trips would affect specific groups of sport fishermen. This table shows that in the absence of sport fishing opportunities 77 percent of Non-Canadian salmon fishermen would not have visited the region. In fact, about 59 percent of all salmon fishermen who visited the area during 1972-73 would have cancelled their trip to the area had sport fishing opportunities not been available.[2]

Non-Resident expenditure estimates for anglers participating in the summer salmon and trout sport fisheries are given in Table 3.20. Non-Canadian parties spent $23.45 per day and Non-Resident Canadian parties spent $20.05 while visiting the region. Non-Resident Canadian expenditures exceeded those of Non-Canadians in both 1972 and 1973.

Bringing together data gathered by both the Federal Fisheries Service summer sport fish survey and the provincial Fish and Wildlife Branch, it is possible to calculate some values associated with the 7,527 angler-days per year of Non-Resident sport fishing effort in the Morice-Bulkley Valley Region:

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2 Since no interviews were conducted during the fall steelhead run, it is obviously not possible to gauge the impact on steelhead fishing trips from the data presented here. We have assumed in our later calculation, however, that because of the specialised nature of the steelhead fishery and the much smaller range of substitute activities available in the fall, all Non-Resident steelhead party trips to the Yellowhead Region would be foregone in the absence of sport fishing.

TABLE 3.18

IMPACT OF SPORT FISHING OPPORTUNITIES ON LENGTH OF MORICE-BULKLEY VALLEY REGION TRIP

AVERAGE 1972, 1973

In the Absence of Sport Fishing Opportunities:	Percentage Response By Sport Fish Parties	
	Non-Resident Canadians	Non-Canadians
	%	%
Party Would Not Have Made Trip	28.3	37.2
Party Would Have Cut Trip Short	19.3	23.3
Party Would Have Substituted Other Activities	52.4	39.5
TOTAL	100.0	100.0

TABLE 3.19

PERCENTAGE DECLINE IN SPORT FISHING PARTY-TRIPS
IN THE ABSENCE OF SPORT FISHING OPPORTUNITIES
FOR THE MORICE-BULKLEY VALLEY REGION
BY PREFERRED SPECIES AND RESIDENCE CATEGORY
1972, 1973

	Percentage Decline in Trips by Parties who Preferred to Catch				
	Salmon	Trout	Steelhead Trout	No Preference	All Sport Fishermen Parties
	%	%	%	%	%
Residents	59	28	50	38	44
Non-Resident Canadians	49	16	24	30	28
Non-Canadians	77	11	22	0	34
All Residence Categories	59	21	37	29	38

TABLE 3.20

AVERAGE NON-RESIDENT EXPENDITURES
IN THE MORICE-BULKLEY VALLEY REGION
SUMMER 1972, 1973

Expenditure	Expenditures of	
	Non-Resident Canadians	Non-Canadians
	$	$
Per Party-Day on Trip	20.05	23.45
Per Angler-Day	15.10	18.70

1. Approximately $159,904 of Non-Resident expenditures in the Morice-Bulkley Valley Region could be attributed per year to the existence of the sport fishery. (See Table 3.21).[3]
2. Non-Resident participation in the sport fishery provided net benefits to the local population of the Morice-Bulkley Valley Region totalling $476,245 (discounted at 8 percent to the year 1999).[4]
3. The local business revenues generated by the Non-Resident sport fishery amounted to $184,500 per year.[5]
4. Non-Resident participation in the sport fishery of the Morice-Bulkley Valley Region provided the equivalent of 13 full-time (or 39 seasonal) jobs per year.[6] It was determined that three small establishments were directly dependent on the sport fishery and would have to close in the absence of angler-party expenditures.

The reader should note that no attempt is made in this report to put a dollar value on the 16,892 Resident angler-days effort in the region each year.

Summary

The Morice-Bulkley Valley Region attracted an average of 8,118 Non-Resident party-days during 1972 and 1973. Of these, 5,366 party-days could be identified with sport fish parties. Of all Non-Resident days in the Morice-Bulkley Valley Region, 46 percent could be associated with the local sport fishery.

The sport fishery provided direct benefits to approximately 975 active, local anglers in the Morice-Bulkley Valley Region. This represented about 14 percent of the local population.

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3 The derivation of these data are shown in Appendix IV.

4 See Appendix V.

5 See Appendix VI.

6 See Appendix VI.

TABLE 3.21

TOTAL NON-RESIDENT EXPENDITURE ATTRIBUTABLE TO THE SUMMER (AVERAGE 1972, 1973) AND STEELHEAD (AVERAGE 1971-72, 1972-73) SPORT FISHERIES OF THE MORICE-BULKLEY VALLEY REGION

	Non-Resident Canadian		Non-Canadian		
	Steelheaders	Non-Steelheaders	Steelheaders	Non-Steelheaders	Total
Total Expenditure in the Morice-Bulkley Valley by Sport Fish Parties	$80,128	$40,895	$43,692	$30,531	$195,246
Percentage Attributable To Sport Fishing	100%	45%	100%	59%	-
Expenditure Attributable To Sport Fishing	$80,128	$18,206	$43,692	$17,878	$159,904

The streams and lakes of the Morice-Bulkley Valley Region supported an average effort of 24,419 angler-days during 1972 and 1973. About 45 percent were steelhead angler-days. Non-Residents accounted for 31 percent of all angling effort. Sixty-five percent of Non-Resident effort was carried out by Canadian sport fishermen. Total angler effort on salmon and trout stocks in the Morice-Bulkley Valley Region rose by 28 percent between 1972 and 1973. Non-Canadian effort declined. Total steelhead effort recorded a small increase.

The Morice-Bulkley Valley Region attracted visitors from all over the United States and Canada. However, fewer visitors came from the Mid-West, the South and the Eastern Seaboard of the United States in 1973.

Most Non-Resident sport fishermen were either retired or in the technical-tradesmen or professional employment classifications. Most Resident sport fishermen were either technical-tradesmen or labourers.

Most sport fishermen in the summer were interested in fishing the region's rivers for salmon and steelhead. Lake fishing for trout was somewhat more important for Non-Canadians than for other sport fishermen. The Bulkley and Morice were the two most popular rivers in the region.

Non-Resident Canadians reported the lowest catch success. They would also have been more prepared to substitute other trip activities in the absence of sport fishing opportunities. Parties varied in their sensitivity to a decline in fish stocks. Most salmon fishermen indicated they would not have visited the region had there been no sport fishery.

In the Morice-Bulkley Valley Region in 1972 and 1973, $195,246 was spent by angler parties including steelheaders and $159,904 of this was directly attributable to sport fishing. Non-Resident expenditures attributable to sport fishing provided an average of 13 full-time jobs in the Morice-Bulkley Valley per year in 1972 and 1973. Annual business revenues of $184,500 were generated in the Morice-Bulkley Valley Region because of Non-Resident expenditures attributable to the sport fishery.

The present value of net benefits to Residents from Non-Resident participation in the sport fisheries of the Morice-Bulkley Valley Region was $476,245.

In conclusion, the steelhead fishery is the Morice-Bulkley Valley Region's most important sport fishery. Canadians accounted for most of the Non-Resident expenditures in the region and, in this sense, the Morice-Bulkley was the most "Canadian" sport fishery of the three under review.

4. THE LOWER SKEENA VALLEY REGION

The Lower Skeena Valley Region contains the largest sport fishery covered in this survey. It is shown in Map 4, below. The region is defined to include the Kitimat Valley, and the whole Skeena system below, and including, the Kispiox River.

The Lower Skeena Valley Region has a population of approximately 50,000, heavily concentrated in the urban centres of Prince Rupert-Port Edward, Terrace-Thornhill and Kitimat. There is also a large on-reserve Indian population around Hazelton. Prince Rupert, apart from being a major seaport, is also the home for much of the North Coast fishing fleet and has major fish processing and pulp operations. Terrace, the market and communications centre of the Skeena Valley, is heavily involved in the forest industries. Kitimat, a planned company town dating from the 1950's, is dependent on an aluminium smelter and a pulp mill.

Visitors are attracted to the Lower Skeena Valley for a number of reasons. Some Non-Canadians make a stopover in the region on the way to Alaska. Many Canadians come to the region to visit friends or to travel the much advertised 'Totem Circle Tour'.[1] The area juxtaposes the past and the present in dramatic fashion. Both the reconstructed traditional Indian village at Ksan and the Alcan smelter at Kitimat, for example, draw tourists to the area. Alpine scenery and good outdoor recreation opportunities are well served by a network of public campgrounds. But aside from all this, perhaps the most important single attraction of the Lower Skeena Valley Region is its renowned sport fishery. Salmon, trout and steelhead abound and Skeena waters hold many sport fish records.

Table 4.1 shows the average number of Non-Resident sport fish

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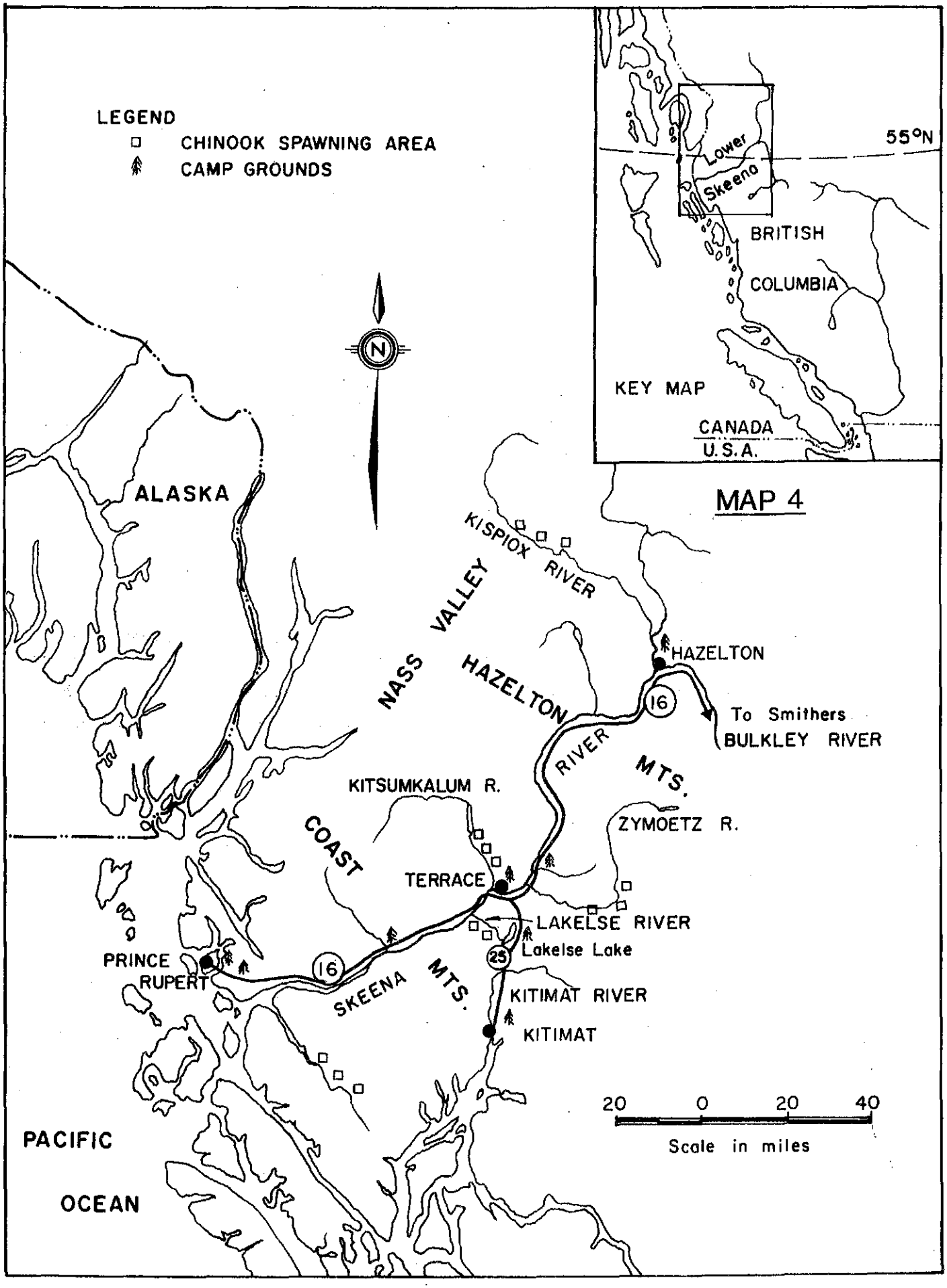
1 The 'Totem Circle Tour' starts at Vancouver and follows the Fraser Valley to Prince George. From Prince George the tour travels the Yellowhead Route to Prince Rupert and thence returns to Vancouver by land and sea via Vancouver Island.



MAP OF THE LOWER SKEENA VALLEY REGION

TABLE 4.1

NUMBER OF NON-RESIDENT PARTY-DAYS
IN THE LOWER SKEENA VALLEY REGION
AVERAGE 1972, 1973

	Party-Days					
	Sport Fish Parties		Non-Sport Fish Parties		All Parties	
	No.	%	No.	%	No.	%
Non-Resident Canadians	9,194	33.9	5,974	22.0	15,168	55.9
Non-Canadians	6,704	24.7	5,245	19.4	11,949	44.1
All Non-Residents	15,898	58.6	11,219	41.4	27,117	100.0

party-days and the total number of Non-Resident party-days in the Lower Skeena Valley Region during 1972 and 1973. Non-Resident parties spent an average of 27,117 party-days in the Lower Skeena Valley Region during these years. Out of this total approximately 59 percent could be attributed directly to sport fishing. Just under 58 percent of all Non-Resident sport fishing party-days were reported by Non-Resident Canadians.

Table 4.2 shows the average number of persons in each sport fish party and the average number of active fishermen in each sport fish party. Non-Canadians travelled in smaller groups than Non-Resident Canadians. Over 70 percent of all members of sport fishing parties actively participated in the sport fishery. The information presented in Tables 4.1 and 4.2 indicates that sport fishermen accounted for approximately 41 percent of all Non-Resident days in the Lower Skeena Valley Region.

The distribution of fishing effort by species and residence category is given in Table 4.3. The streams and lakes of the Lower Skeena Valley Region supported an average annual effort of 127,444 salmon and trout angler-days during 1972 and 1973. In the same period the system supported 20,536 steelhead angler-days. Residents accounted for almost 90 percent of the total effort on salmon and trout stocks. They also were responsible for over two-thirds of the effort on steelhead stocks. During this two year period, effort increased for all groups except for Non-Canadians in the salmon and trout sport fishery.

Table 4.4 shows Resident angling effort by sport fishermen living in the communities of Terrace-Thornhill, Kitimat and Prince Rupert-Port Edward. Terrace-Thornhill had 2,438 active sport fishermen, approximately 19 percent of the total population. Sport fishermen from Terrace-Thornhill fished just under 40,000 days per year in the Lower Skeena Valley Region. In Prince Rupert 2,813 active sport fishermen (about 17 percent of the total population) fished over 45,000 days per year in the Lower Skeena Valley Region. Kitimat had the highest sport fishing participation rate. In total, 2,478 Kitimat anglers (21 percent of the total population) fished

TABLE 4.2

NUMBER OF PEOPLE PER NON-RESIDENT SPORT FISH PARTY

NUMBER OF ANGLERS PER PARTY

LOWER SKEENA VALLEY REGION

AVERAGE 1972, 1973

	Sport Fish Parties	
	Non-Resident Canadians	Non-Canadians
Number of people per party	3.39	2.98
Number of anglers per party	2.38	2.15
Percentage of Party Members Who Sport Fish	70%	72%

TABLE 4.3

ANGLER EFFORT IN THE LOWER SKEENA VALLEY REGION

BY RESIDENCE CATEGORY. SALMON & TROUT 1972, 1973. STEELHEAD 1971-72, 1972-73

Salmon and Trout Angler-Days*

	1972		1973		Average 1972-1973		Percentage Change	
	No.	%	No.	%	No.	%	+	-
Residents	93,269	89.5	135,272	89.8	114,271	89.7	+ 45.0	
Non-Resident Canadians	5,311	5.1	10,865	7.2	8,088	6.4	+104.6	
Non-Canadians	5,578	5.4	4,592	3.1	5,085	4.0		-17.7
TOTAL	104,158	100.0	150,729	100.0	127,444	100.0	+ 44.7	

Steelhead Angler Days**

	1971-72		1972-73		Average 1971-72 1972-73		Percentage Change	
	No.	%	No.	%	No.	%	+	-
Residents	13,536	68.2	14,089	66.3	13,813	67.3	+ 4.1	
Non-Resident Canadians	3,601	18.2	3,751	17.7	3,676	17.9	+ 4.1	
Non-Canadians	2,704	13.6	3,390	16.0	3,047	14.8	+ 25.4	
TOTAL	19,841	100.0	21,230	100.0	20,536	100.0	+ 7.0	

* Source: Fisheries Service Survey 1972, 1973.

** Source: Steelhead Harvest Analysis, 1971-72, 1972-73.

TABLE 4.4

RESIDENT ANGLING EFFORT
IN THE LOWER SKEENA VALLEY REGION
BY COMMUNITY
1972, 1973

	Residents of		
	Terrace & Thornhill**	Kitimat	Prince Rupert & Port Edward**
Population*	12,995	11,803	16,566
Estimated Total Angler-Days Per Year in the Lower Skeena Valley Region***	39,502	40,142	45,565
Angler-Days Per Angler-Year in the Lower Skeena Valley Region****	16.2	16.2	16.2
Estimated Number of Active Anglers	2,438	2,478	2,813
Anglers as Percent of Total Population	19%	21%	17%

* Canada Census, 1971.

** The data for Terrace and Thornhill has been aggregated. The data for Prince Rupert and Port Edward has also been aggregated.

*** Based on Fisheries Service survey data.

**** Northern British Columbia average of 16.2 as given in Pearse-Bowden, The Value of Fresh Water Sport Fishing in British Columbia, Victoria, 1971, p. 21, Table 12.

just over 40,000 days per year in the Lower Skeena Valley Region.

Tables 4.5, 4.6 and 4.7 show the permanent place of residence of sport fishing parties. Virtually all Residents were from Prince Rupert, Terrace or Kitimat. One-half of Non-Resident Canadians were from other parts of British Columbia; about one-third lived in Alberta. Over 60 percent of Non-Canadians were from the West Coast United States. Non-Canadians' patterns of participation changed between 1972 and 1973. In the latter year representation from more distant parts of the United States declined.

Table 4.8 reports the employment classification of sport fishermen in the Lower Skeena Valley Region in 1972 and 1973. About 35 percent of Non-Canadians were retired. Of the working population, technical-tradesmen formed the largest group. Professionals were the second most heavily represented group among Non-Residents. Nearly 19 percent of Resident sport fishermen indicated they were employed as labourers.

In Table 4.9 summer sport fishing effort is given by fishing location and place of residence. All parties devoted more time to fishing the main Skeena than any other stream. Nearly 42 percent of Non-Resident Canadian effort and 51 percent of Non-Canadian effort took place on the Skeena River. The Kitimat ranked third for all sport fishermen with the Zymoetz fourth. The major anomaly seemed to be the Kispiox River. This river ranked second for Non-Residents but was unimportant to Resident sport fishermen. The Lakelse system was relatively much more popular for Residents.

In Table 4.10 the distribution of steelhead angler-days is reported for 1971-72 and 1972-73. Almost all steelhead effort in the Lower Skeena Valley Region took place on the six waterways identified in the table. About two-thirds of the total effort took place on three rivers - the Zymoetz, the Kispiox and the Kitimat. The pattern of participation differed considerably between Residents and Non-Residents. Of the six

TABLE 4.5

RESIDENCE DISTRIBUTION OF RESIDENT PARTIES
IN THE LOWER SKEENA VALLEY REGION
AVERAGE 1972, 1973

Residence Location	Percentage Response By Resident Parties
Lower Skeena Valley:	%
Prince Rupert	45
Terrace	39
Kitimat	9
Other	1
Sub-Total	94
Nechako Lakes District:	
Prince George	3
Other	1
Sub-Total	4
Morice-Bulkley Valley:	2
ALL AREAS	100

TABLE 4.6

RESIDENCE DISTRIBUTION OF NON-RESIDENT CANADIAN PARTIES
IN THE LOWER SKEENA VALLEY REGION
AVERAGE 1972, 1973

Residence Location	Percentage Response By Non-Resident Canadian Parties
	%
British Columbia	50
Alberta	37
Ontario	7
Manitoba-Saskatchewan	5
Quebec-Maritimes	1
TOTAL	100

TABLE 4.7

RESIDENCE DISTRIBUTION OF NON-CANADIAN PARTIES IN THE LOWER SKEENA VALLEY REGION, 1972, 1973

	Percentage Response by Non-Canadian Parties		
Residence Location	1972	1973	Average
West Coast:	%	%	%
California	31	39	
Washington	22	20	
Oregon	5	10	
Sub-Total	58	69	64
Mountain:			
Idaho	3	3	
Montana	2	7	
Other	3	5	
Sub-Total	8	15	12
Mid-West:			
Michigan	2	3	
Other	16	7	
Sub-Total	18	10	14
South:			
Texas	3	1	
Other	2	1	
Sub-Total	5	2	3
East Coast:	10	3	7
TOTAL	100	100	100

TABLE 4.8

EMPLOYMENT STATUS OF SPORT FISHERMEN IN THE LOWER SKEENA VALLEY REGION BY RESIDENCE CATEGORY. AVERAGE 1972, 1973

Employment Status	Percentage Response By		
	Residents	Non-Resident Canadians	Non-Canadians
	%	%	%
Executive-Managerial	7.2	8.7	8.9
Professional	9.3	20.5	12.2
Technical-Tradesmen	40.2	28.3	16.7
Clerical-Sales	7.2	3.9	4.4
Labourer	18.6	9.4	3.3
Self-Employed	8.2	12.6	10.0
Retired	7.2	15.0	35.6
Unclassified	2.1	1.6	8.9
TOTAL	100.0	100.0	100.0

TABLE 4.9

ANGLER EFFORT ON SELECTED STREAMS AND LAKES*
OF THE LOWER SKEENA VALLEY REGION
BY RESIDENCE CATEGORY, SUMMER 1972, 1973

Fishing Location	Residents		Non-Resident Canadians		Non-Canadians		All Categories	
	No.	%	No.	%	No.	%	No.	%
Skeena River	1035	49.7	210	41.7	216	50.4	1461	48.5
Lakelse River & Lake	444	21.3	21	4.2	46	10.7	511	16.9
Kitimat River	315	15.1	57	11.3	63	14.7	435	14.4
Zymoetz River	135	6.5	53	10.5	30	7.0	218	7.2
Kispiox River	11	0.5	120	23.8	70	16.3	201	6.7
Kitsumkalum River	142	6.8	43	8.5	4	0.9	189	6.3
TOTAL	2082	100.0	504	100.0	429	100.0	3015	100.0

* These are the most heavily fished streams and lakes of the Lower Skeena Valley Region.

TABLE 4.10

STEELHEAD ANGLER-DAYS IN THE LOWER SKEENA VALLEY REGION BY RESIDENCE CATEGORY. AVERAGE 1971-72, 1972-73*

	Estimated Steelhead Angler-Days On The													
	Skeena River		Kispiox River		Lakelse River		Zymoetz River		Kitimat River		Kitsum-kalum River		Total for Area***	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Residents**	1,727	8	1,489	7	1,620	8	2,369	12	4,429	21	1,991	10	13,813	67
Non-Resident Canadians	709	3	973	5	124	1	1,426	7	300	1	104	1	3,676	18
Non-Canadians	789	4	1,427	7	27	-	748	4	5	-	34	-	3,047	15
TOTAL	3,225	16	3,889	19	1,771	9	4,543	22	4,734	22	2,129	10	20,536	100

* Source: Steelhead Harvest Analysis, Province of British Columbia, Fish and Wildlife Branch, Victoria, B. C., 1971-72, 1972-73.

** Residents defined, as per Steelhead Harvest Analysis, ibid., to include residents of Northern Interior and Upper Mainland Coast statistical areas.

*** The reader should note that the totals given also include effort on a few minor steelhead streams not listed separately.

streams identified, the Kitimat recorded by far the highest number of Resident angler-days. Non-Resident Canadians devoted more days to fishing the Zymoetz than to any other stream in the area. For Non-Canadians, the Kispiox dominated taking 47 percent of Non-Canadian effort. Practically all of the effort on the Kitsumkalum, Lakelse and Kitimat systems, was undertaken by Residents.

Table 4.11 cross-classifies sport fishermen by preferred species and residence category. It shows that 43 percent of all sport fishermen preferred to catch salmon, 32 percent trout and 17 percent steelhead. Close to half of all Residents and over half Alberta sport fishermen preferred salmon. Over one-third of B. C. Lower Mainland sport fishermen preferred steelhead. Forty percent of the Non-Canadian and 42 percent of the B. C. Non-Lower Mainland groups preferred trout.

Table 4.12 shows the species most sought after and Table 4.13 shows the type of fishing most frequently participated in by Lower Skeena Valley Region sport fishermen. Most sport fishermen chose to fish rivers rather than lakes and were interested in catching salmon.

Salmon and trout catch and effort information is presented in Tables 4.14 and 4.15. Non-Canadians experienced the greatest success. An estimated average of 13,839 salmon and 99,663 trout were taken from the Lower Skeena-Kitimat systems during 1972 and 1973. Non-Canadians caught 14 percent of the salmon and 6 percent of the trout. While the total accuracy of the above catch figures is open to some question there is an indication that local salmon stocks are fished more heavily than has been recognised in the past by the Fisheries Service.[2]

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2 This point was also raised above with reference to Morice-Bulkley stocks (see p. 43). It was estimated there that over 1,200 chinook were caught in the Morice-Bulkley system. To this can be added approximately 5,900 chinook caught in the main Skeena and its other tributaries. This gives a total of 7,100 chinook caught in the system or 9.0 percent of a stock of about 78,500. For Morice-Bulkley chinooks the sport fish exploitation rate was about 2,100 out of a stock of 20,000 or about 10.5 percent. On Skeena system coho the sport fish exploitation rate was approximately 6,500 out of a stock size of 150,000 or about 4.3 percent.

TABLE 4.11

PREFERRED SPECIES BY RESIDENCE CATEGORY
IN THE LOWER SKEENA VALLEY REGION
1972, 1973

Residence Category	Percentage Who Preferred				
	Salmon	Trout	Steelhead	No Preference	All Parties
	%	%	%	%	%
Residents	48	29	18	5	100
Non-Resident Canadians					
Alberta	51	29	8	12	100
B.C. Lower Mainland	26	33	35	7	100
B.C. Non-Lower Mainland	42	42	7	9	100
All Non-Resident Canadians	42	34	15	10	100
Non-Canadians					
U.S. West Coast	41	31	19	9	100
U.S. Mountain	37	37	21	5	100
U.S. Mid-West	19	56	25	0	100
U.S. South	0	20	20	60	100
All Non-Canadians	32	40	21	9	100
ALL CATEGORIES	43	32	17	7	100

TABLE 4.12

SPECIES MOST SOUGHT AFTER
IN THE LOWER SKEENA VALLEY REGION
AVERAGE, SUMMER 1972, 1973

Species	Percentage Response By		
	Residents	Non-Resident Canadians	Non-Canadians
	%	%	%
Salmon	46	58	46
Trout	36	32	42
Steelhead Trout	6	5	7
Other	2	-	1
No Preference	9	4	4
TOTAL	100	100	100

TABLE 4.13

TYPE OF FISHING ON TRIP BY PERCENTAGE OF TIMES MENTIONED
BY LOWER SKEENA VALLEY REGION PARTIES
AVERAGE 1972, 1973

Type of Fishing	Percentage of Times Mentioned By		
	Residents	Non-Resident Canadians	Non-Canadians
	%	%	%
Lake:			
Boat	4	18	23
Shoreline	2	8	10
River:			
Boat	6	11	12
Shoreline	88	63	55
TOTAL	100	100	100

TABLE 4.14

SPORT FISHING EFFORT
ON LOWER SKEENA VALLEY REGION SALMON STOCKS
TOTAL SALMON CATCH AND CATCH PER ANGLER-DAY
AVERAGE 1972, 1973

	Salmon Angler-Days	Salmon Catch*	Catch Per Angler-Day
Residents	64,103	10,256	.16
Non-Resident Canadians	5,212	1,616	.31
Non-Canadians	2,658	1,967	.74
TOTAL	71,973	13,839	.19

* Of the total salmon catch approximately 2,000 fish were taken from the Kitimat system and 11,800 from the Skeena system. About half the Skeena catch would be chinook and half coho.

TABLE 4.15

SPORT FISHING EFFORT
ON LOWER SKEENA VALLEY REGION TROUT STOCKS*
TOTAL TROUT CATCH AND CATCH PER ANGLER-DAY
AVERAGE 1972, 1973

	Trout Angler-Days	Trout Catch	Catch Per Angler-Day
Residents	50,168	89,575	1.79
Non-Resident Canadians	2,876	3,681	1.28
Non-Canadians	2,427	6,407	2.64
TOTAL	55,471	99,663	1.80

* Excludes steelhead trout, given separately in Table 4.16.

Table 4.16 presents catch per angler-day, total catch and total effort on Lower Skeena Valley Region steelhead stocks. The fishery supported 20,536 angler-days and yielded 3,971 steelhead. Non-Resident Canadians had the greatest success, recording a catch of .21 steelhead per angler-day.

Table 4.17 ranks the steelhead rivers of the Lower Skeena Valley Region by catch (including catch and release) per angler-day. Greatest success was recorded on the Zymoetz River. The Zymoetz was also the only steelhead river in the Lower Skeena Valley Region among the British Columbian top ten steelhead rivers (ranked in Table 3.17, above).

Table 4.18 indicates the importance of sport fishing opportunities in attracting Non-Residents to the Lower Skeena Valley Region in 1972 and 1973. Only 37 percent of Non-Resident Canadian and 22.4 percent of Non-Canadian sport fish parties were prepared to substitute other activities in the absence of sport fishing. It is clear from the analysis carried out in this paper that although a smaller percentage of Non-Residents visiting the Lower Skeena Valley Region participated in the sport fishery, those who did were less willing to forego their sport fishing experience.

Table 4.19 shows how a decline in sport fishing would affect specific groups of sport fishermen. The relatively large reduction in Non-Canadian parties would be borne by sport fishermen with a reported preference for salmon or steelhead. These parties came mainly from the U. S. West Coast - Mountain regions. More than proportional declines would also be registered by Non-Resident Canadian salmon and steelhead fishermen. B. C. Lower Mainland steelhead parties and Alberta salmon parties would be most affected. Non-Resident trout parties and those fish-

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2 (cont.) In the past it was accepted that there were lower sport fish exploitation rates, (of about 4 percent on chinooks and 1.25 percent on coho) on the Skeena River system. See N. J. Lemmen, The Non-Tidal Sport Sport Fisheries of the Skeena and Nass Rivers in 1969 and 1970, Fisheries Service, Prince Rupert, 1972, p. 25. (At least a part of this difference may be accounted for by rapid growth of sport fishing effort in the past few years.)

TABLE 4.16

SPORT FISHING EFFORT
ON LOWER SKEENA VALLEY REGION STEELHEAD STOCKS
TOTAL STEELHEAD CATCH AND CATCH PER ANGLER-DAY
AVERAGE 1971-72, 1972-73

	Steelhead Angler-Days	Steelhead Catch	Catch Per Angler-Day
Residents	13,813	2,624	.19
Non-Resident Canadians	3,676	790	.21
Non-Canadians	3,047	557	.18
TOTAL	20,536	3,971	.19

TABLE 4.17

MAJOR STEELHEAD RIVERS OF THE LOWER SKEENA VALLEY REGION RECORDING OVER 1,000 ANGLER-DAYS PER YEAR RANKED BY CATCH (INCLUDING CATCH AND RELEASE) PER ANGLER-DAY AVERAGE 1970-71, 1971-72, 1972-73

River	Catch Per Angler-Day	Rank In Lower Skeena*
Zymoetz	.49	1
Kitsumkalum	.27	2
Kispiox	.26	3
Lakelse	.18	4
Skeena	.15	5
Kitimat	.14	6

* To compare with British Columbian rankings see Table 3.17.

Source: Steelhead Harvest Analysis, Province of British Columbia, Fish and Wildlife Branch, Victoria, B. C., 1970-72, 1971-72, 1972-73.

TABLE 4.18

IMPACT OF SPORT FISHING OPPORTUNITIES ON LENGTH OF LOWER SKEENA VALLEY REGION TRIP

AVERAGE 1972, 1973

In the Absence of Sport Fishing Opportunities:	Percentage Response By Sport Fish Parties	
	Non-Resident Canadians	Non-Canadians
	%	%
Party Would Not Have Made Trip	35.6	41.6
Party Would Have Cut Trip Short	27.4	36.0
Party Would Have Substituted Other Activities	37.0	22.4
TOTAL	100.0	100.0

TABLE 4.19

PERCENTAGE DECLINE IN SPORT FISHING PARTY-TRIPS
IN THE ABSENCE OF SPORT FISHING OPPORTUNITIES
FOR THE LOWER SKEENA VALLEY REGION
BY PREFERRED SPECIES AND RESIDENCE CATEGORY
1972, 1973

	Percentage Decline in Trips by Parties who Preferred to Catch:				
	Salmon	Trout	Steelhead Trout	No Preference	All Sport Fishermen Parties
	%	%	%	%	%
Residents	35	33	40	17	34
Non-Resident Canadians	43	19	50	0	36
Non-Canadians	63	19	58	0	42
All Residence Categories	45	24	48	6	37

ermen specifying no preference would register only minor declines in the number of visits to the area.

Details of Non-Resident expenditures are contained in Table 4.20. The Lower Skeena Valley Region reported Non-Canadian expenditures of $22.95 per trip day and $23.85 per angler-day. For Non-Resident Canadians the corresponding figures were $18.60 per trip day and $16.45 per angler-day. The reader should note that these figures only refer to angler parties in the salmon and trout sport fisheries.

Once again, bringing together data gathered in this survey and by the Fish and Wildlife Branch, it is possible to calculate the value of Non-Resident sport fishing to Residents of the Lower Skeena Valley Region. The values calculated here do not take into account the direct benefits to Resident anglers who devoted 128,084 angler-days to sport fishing in this region. Thus:

1. Approximately $412,361 Non-Resident expenditures in the Lower Skeena Valley Region was attributable each year to the existence of sport fishing opportunities. (See Table 4.21.)[3]
2. The total present value of Non-Resident participation in local sport fisheries to the population of the Lower Skeena Valley Region was $2,501,066.[4]
3. The local business revenues generated by the Non-Resident sport fishery were $583,700 per year.[5]
4. Non-Resident participation in the sport fishery provided 38 full-time jobs annually in the Lower Skeena Valley Region.[6] A survey of business establishments, however, could identify only five directly dependent on sport fishing business for their existence.

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3 The derivation of these data is explained in Appendix IV.

4 See Appendix V.

5 See Appendix VI.

6 See Appendix VI.

TABLE 4.20

AVERAGE NON-RESIDENT EXPENDITURES
IN THE LOWER SKEENA VALLEY REGION
SUMMER 1972, 1973

Expenditure	Expenditures of	
	Non-Resident Canadians	Non-Canadians
	$	$
Per Party-Day on Trip	18.60	22.95
Per Angler-Day	16.45	23.85

TABLE 4.21

TOTAL NON-RESIDENT EXPENDITURE ATTRIBUTABLE TO THE SUMMER (AVERAGE 1972, 1973) AND STEELHEAD (AVERAGE 1971-72, 1972-73) SPORT FISHERIES OF THE LOWER SKEENA VALLEY REGION

	Non-Resident Canadian		Non-Canadian		
	Steelheaders	Non-Steelheaders	Steelheaders	Non-Steelheaders	Total
Total Expenditure in the Lower Skeena Valley by Sport Fish Parties	$100,039	$154,505	$143,202	$131,982	$529,728
Percentage Attributable to Sport Fishing	100%	51%	100%	68%	-
Expenditure Attributable to Sport Fishing	$100,039	$ 79,026	$143,202	$ 90,094	$412,361

Summary

The Lower Skeena Valley Region attracted an average of 27,117 Non-Resident party-days during 1972 and 1973. Of these, 15,898 days could be identified with sport fish parties. Around 41 percent of Non-Resident visitors participated in the local sport fishery. Also, the sport fishery provided direct benefits to approximately 7,700 local anglers, or 19 percent of the population, in the major urban centres of the Lower Skeena Valley Region.

The streams and lakes of the Lower Skeena Valley Region supported an average effort of 147,980 angler-days in 1972 and 1973. Non-Residents accounted for 13 percent of all angling effort. Canadian sport fishermen accounted for 59 percent of Non-Resident effort. Angler effort on salmon and trout in the Lower Skeena Valley rose by 44.7 percent between 1972 and 1973. Non-Canadian steelhead effort rose by 25 percent in this two year period.

The Lower Skeena Valley Region attracted visitors from all over the United States and Canada. Most Non-Resident sport fishermen identified themselves as being technical-tradesmen or as professionally employed. Most Resident sport fishermen were technical-tradesmen or labourers.

Most sport fishermen participating in the sport fishery were interested in shoreline river fishing for salmon. In terms of angler-days the Skeena, Kispiox and Kitimat ranked one, two and three, respectively, among both Non-Resident categories. For Residents, the Kispiox ranked low and the Lakelse system ranked second to the main Skeena. The Zymoetz rated first among Non-Resident Canadian steelheaders, the Kispiox first among Non-Canadian steelheaders and the Kitimat first among Resident steelheaders.

Non-Resident Canadians had the lowest salmon and trout catch success. However, Non-Resident Canadians did relatively well steelhead fishing. Non-Canadians had the best trout and salmon catch records. In the absence of sport fishing opportunities many Non-Resident sport fish

parties indicated that they would have cancelled or cut short their visit. This was particularly noticeable among Non-Canadian sport fish parties. The greatest decline in trips in the absence of sport fishing opportunities would be recorded by salmon and steelhead parties from the U. S. West Coast - Mountain regions, salmon parties from Alberta, and Lower Mainland steelheaders.

Sport fish parties spent $529,728 annually in the Lower Skeena Valley Region. Of this, $412,361 was directly attributable to the existence of the sport fishery. Non-Resident expenditures attributable to sport fishing provided 38 man-years of employment annually in the area in 1972 and 1973. Annual business revenues generated by Non-Resident angler parties' attributable expenditures amounted to $583,700 per year in 1972 and 1973. The present value of net benefits to Residents from Non-Resident participation in the sport fisheries of the Lower Skeena Valley Region was $2.5 million.

The Lower Skeena Valley Region supports an important sport fishery largely based on the system's salmon runs. While it was predominantly a Resident sport fishery, Non-Resident expenditures directly attributable to the existence of sport fishing provided considerable benefits to the local population.

5. A COMPARATIVE ANALYSIS OF THE SPORT FISHERIES OF THE YELLOWHEAD REGION

This section has two major tasks. First, it undertakes a statistical restatement of the major conclusions on each of the sport fishing regions identified in this report. Second, comparisons are made which put each sport fishery in the context of the Yellowhead Region as a whole.

Table 5.1 presents total angler effort in the Yellowhead Region by fishing area and residence category. Eighty-one percent of all effort in the region was undertaken by Residents. The remainder was fairly evenly divided between Non-Resident Canadians and Non-Canadians. The Lower Skeena Valley Region recorded most of the angler-days (66 percent) in the Yellowhead Region. However, the Nechako Lakes District supported more Non-Canadian angler-days than any other region. The Morice-Bulkley Valley Region was the smallest of the three regions, recording about 24,000 angler-days or approximately 10 percent of the total angler effort.

In Table 5.2 angler effort is classified according to species sought. The Lower Skeena Valley Region accounted for 90 percent of the total salmon fishing effort in the Yellowhead Region. The table also shows the prominence of trout fishing in the Nechako Lakes District. In the Morice-Bulkley Valley Region the data show more effort on steelhead stocks than on any other species. Each region was found to possess a unique mix of sport fishing characteristics. Trout fishing dominated in the Nechako Lakes District, steelhead fishing in the Morice-Bulkley Valley Region and salmon fishing in the Lower Skeena Valley Region.

The percentage change in sport fishing effort between 1972 and 1973 is tabled in 5.3. There was an overall increase between 1972 and 1973 of 22 percent. This was largely concentrated in the Lower Skeena Valley Region's salmon and trout sport fishery. Increased participation masked declines in Non-Canadian effort of 13.8 percent. Participation in

TABLE 5.1

DISTRIBUTION OF ANGLER-DAYS IN THE YELLOWHEAD REGION
BY SUB-REGION AND RESIDENCE CATEGORY
AVERAGE 1972, 1973

	Angler-Days							
	Nechako Lakes District		Morice-Bulkley Valley		Lower Skeena Valley Region		Total Yellowhead Region	
	No.	%	No.	%	No.	%	No.	%
Residents	37,794	17	16,892	7	128,084	57	182,770	81
Non-Resident Canadians	6,988	3	4,888	2	11,764	5	23,640	10
Non-Canadians	8,297	4	2,639	1	8,132	4	19,068	9
All Residence Categories	53,079	24	24,419	10	147,980	66	225,478	100

TABLE 5.2

DISTRIBUTION OF ANGLER-DAYS IN THE YELLOWHEAD REGION
BY SUB-REGION AND TYPE OF FISHING
AVERAGE 1972, 1973

	Angler-Days on							
	Salmon		Trout		Steelhead Trout		All Species	
	No.	%	No.	%	No.	%	No.	%
Nechako Lakes District	-	-	45,654	43	-	-	53,079*	23
Morice-Bulkley Valley Region	8,273	10	5,095	5	11,051	35	24,419	11
Lower Skeena Valley Region	71,973	90	55,471	52	20,536	65	147,980	66
TOTAL	80,246	100	106,220	100	31,587	100	225,478	100

* Nechako total includes Kokanee, Char.

TABLE 5.3

PERCENTAGE REGIONAL INCREASE/DECREASE
IN ANGLER EFFORT BY RESIDENCE CATEGORY AND TYPE OF FISHING
1972 - 1973

	Percentage Increase/Decrease in Angler-Days					
	Steelhead Angler-Days		Non-Steelhead Angler-Days			
	Morice-Bulkley Valley Region	Lower Skeena Valley Region	Nechako Lakes District	Morice-Bulkley Valley Region	Lower Skeena Valley Region	Total Angler-Days
Residents	+ 1.6	+ 4.1	-11.5	+42.6	+ 45.0	+25.5
Non-Resident Canadians	-21.5	+ 4.1	+ 4.0	+21.8	+104.6	+28.5
Non-Canadians	+ 3.6	+25.4	-22.5	-27.7	- 17.7	-13.8
All Resident Categories	- 3.7	+ 7.0	-11.5	+28.4	+ 44.7	+22.0

the Nechako Lakes District fishery also declined by 11.5 percent and participation in the Morice-Bulkley Valley Region steelhead fishery declined by 3.7 percent. There is thus a marked variation in participation patterns within the Yellowhead Region. This suggests that generalised predictions about growth in sport fishing etc., are not likely to be valid.

Each of the surveyed sport fisheries also attracted a unique socio-economic mix of sport fishermen. Table 5.4 compares the frequency with which fishermen groups, cross-classified by preferred species and geographic origin, were reported in our survey. For example, using 100 to indicate the average number of times B. C. Lower Mainland salmon fishermen occurred in our survey, it can be seen that they were most heavily represented in the Lower Skeena Valley Region (index 154). They were least heavily represented in the Nechako Lakes District (index 62). The table shows that the Nechako Lakes District registered more than its share of U. S. West Coast trout anglers. Yet, paradoxically, Mid-West U. S. trout anglers were under-represented in the Nechako Lakes District. The Morice-Bulkley Valley Region attracted relatively few Non-Canadians. However, it did attract sport fishermen from the B. C. Non-Lower Mainland and salmon fishermen from Alberta. In the Lower Skeena Valley Region, there was a notable concentration of salmon fishermen in general and a heavy representation of fishermen from the U. S. Mid-West and trout anglers from B. C.'s Non-Lower Mainland.

Tables 5.5, 5.6 and 5.7 contrast a selection of other types of socio-economic data. It can be seen in 5.5 that a relatively large number of Non-Canadians were retired. The Nechako Lakes District reported the greatest percentage of retired sport fishermen. Table 5.6 shows a heavy concentration of technical-tradesmen and labourers among the Resident population. Relatively few Non-Residents fell into these employment categories. As a final example of variation in socio-economic mix, Table 5.7 relates the incidence of professionally employed sport fishermen. A considerable number of Non-Resident sport fishermen indicated that they were professionally employed.

TABLE 5.4

FREQUENCY INDEX OF SPORT FISHERMEN
BY SELECTED SPECIES PREFERENCE AND PLACE OF RESIDENCE
AVERAGE 1972, 1973

Residence Area	Species Preference	Frequency Index			Average Frequency throughout Yellowhead Region Equals 100
		Nechako Lakes District	Morice-Bulkley Valley Region	Lower Skeena Valley Region	
B.C. Lower Mainland	Salmon	62	75	154	100
B.C. Non-Lower Mainland	Salmon	22	147	143	100
Alberta	Salmon	41	171	124	100
U.S. West Coast	Salmon	91	77	124	100
B.C. Non-Lower Mainland	Trout	105	28	138	100
U.S. West Coast	Trout	163	35	67	100
U.S. Mid-West	Trout	75	57	155	100
B.C. Lower Mainland	Steelhead	90	113	103	100
B.C. Non-Lower Mainland	Steelhead	76	265	27	100
U.S. Mountain	Steelhead	80	181	73	100
U.S. California	All Species	133	63	84	100
U.S. Mid-West	All Species	90	68	131	100

TABLE 5.5

FREQUENCY INDEX OF SPORT FISHERMEN
WHO REPORTED THEMSELVES AS RETIRED
BY SUB-REGION AND RESIDENCE CATEGORY
1972, 1973

(Average Frequency, 18 per 100 Interviews, Equals 100)

	Nechako Lakes District	Morice-Bulkley Valley Region	Lower Skeena Valley Region	All Yellowhead Region
Residents	14	9	40	21
Non-Resident Canadians	60	125	83	86
Non-Canadians	292	198	198	243
All Residence Categories	127	77	97	100

TABLE 5.6

FREQUENCY INDEX OF SPORT FISHERMEN
WHO REPORTED THEIR EMPLOYMENT IN
TECHNICAL-TRADESMEN-LABOURER CATEGORIES
BY SUB-REGION AND RESIDENCE CATEGORY
1972, 1973

(Average Frequency, 39 per 100 Interviews, Equals 100)

	Nechako Lakes District	Morice-Bulkley Valley Region	Lower Skeena Valley Region	All Yellowhead Region
Residents	132	150	149	147
Non-Resident Canadians	98	82	96	93
Non-Canadians	20	82	51	41
All Residence Categories	84	117	104	100

TABLE 5.7

FREQUENCY INDEX OF SPORT FISHERMEN
WHO REPORTED THEIR EMPLOYMENT IN
THE PROFESSIONAL CATEGORY
BY SUB-REGION AND RESIDENCE CATEGORY
1972, 1973

(Average Frequency, 13 per 100 Interviews, Equals 100)

	Nechako Lakes District	Morice-Bulkley Valley Region	Lower Skeena Valley Region	All Yellowhead Region
Residents	61	26	72	52
Non-Resident Canadians	107	156	160	140
Non-Canadians	139	139	95	124
All Residence Categories	102	86	109	100

Tables 5.8, 5.9 and 5.10 show average stay, party size and number of days fished for Non-Resident sport fishermen visiting the Yellowhead Region during 1972 and 1973. Non-Canadians travelled in smaller groups and fished longer in all areas of the Yellowhead Region. It appears that Non-Canadians visiting the Nechako Lakes District stayed longest.

Non-Resident expenditure data is reported in Tables 5.11, 5.12 and 5.13. This information reveals very little variation in expenditure per day among Non-Residents interviewed in the various regions of the Yellowhead. Non-Canadian expenditures were consistently higher than those of Non-Resident Canadians. Non-Resident Canadian and Non-Canadian sport fishermen accounted for 44 and 56 percent respectively, of expenditures attributable to fishing in the Yellowhead Region. Forty-seven percent of all attributable expenditures were made by steelhead fishermen.

The value of Non-Resident sport fishing to Residents of the Yellowhead Region is presented in Table 5.14. These indirect benefits have been calculated assuming certain growth patterns among various sport fishermen groups as explained in Appendix V. In summary, the value to Residents of Non-Resident sport fishing, discounted to the year 1999 at 8% per annum, was $1.34 million for the Nechako Lakes District, $0.48 million for the Morice-Bulkley Valley Region and $2.50 million for the Lower Skeena Valley Region.

In addition, Residents received direct benefits from their own local sport fishing experience. Table 5.15 indicates that fishing was more important to people living in Prince Rupert, Terrace and Kitimat than it was to people living in the Smithers-Prince George area.

Summary

This section has served to highlight the unique regional features of participation patterns in the sport fisheries of the Yellowhead Highway between Prince George and Prince Rupert. Each of the surveyed sport fish-

TABLE 5.8

INDEX OF LENGTH OF STAY OF
NON-RESIDENT PARTIES IN THE YELLOWHEAD REGION
BY SUB-REGION AND RESIDENCE CATEGORY
1972, 1973

(Average Stay, 16.84 Days, Equals 100)

	Nechako Lakes District	Morice-Bulkley Valley Region	Lower Skeena Valley Region	All Yellowhead Region
Non-Resident Canadians	77	98	75	80
Non-Canadians	163	107	86	123
All Non-Residents	126	101	80	100

TABLE 5.9

INDEX OF NUMBER OF PEOPLE TRAVELLING
IN NON-RESIDENT PARTIES IN THE YELLOWHEAD REGION
BY SUB-REGION AND RESIDENCE CATEGORY
1972, 1973

(Average Party Size, 3.18 People, Equals 100)

	Nechako Lakes District	Morice-Bulkley Valley Region	Lower Skeena Valley Region	All Yellowhead Region
Non-Resident Canadians	108	113	107	108
Non-Canadians	87	97	94	91
All Non-Residents	96	108	101	100

TABLE 5.10

INDEX OF NUMBER OF DAYS FISHED
BY NON-RESIDENT PARTIES
ON THEIR TRIP TO THE YELLOWHEAD REGION
BY SUB-REGION AND RESIDENCE CATEGORY
1972, 1973

(Average Number of Angler-Days, 8.34, Equals 100)

	Nechako Lakes District	Morice-Bulkley Valley Region	Lower Skeena Valley Region	All Yellowhead Region
Non-Resident Canadians	63	102	70	74
Non-Canadians	170	139	85	129
All Non-Residents	124	114	77	100

TABLE 5.11

INDEX OF NON-RESIDENT EXPENDITURES
PER DAY ON YELLOWHEAD TRIP
BY SUB-REGION AND RESIDENCE CATEGORY
1972, 1973

(Average Expenditure per Day, $20.59, Equals 100)

	Nechako Lakes District	Morice-Bulkley Valley Region	Lower Skeena Valley Region	All Yellowhead Region
Non-Resident Canadians	87	97	90	89
Non-Canadians	113	114	111	112
All Non-Residents	99	100	104	100

TABLE 5.12

AGGREGATE NON-RESIDENT ATTRIBUTABLE EXPENDITURES
BY SUB-REGION AND RESIDENCE CATEGORY
AVERAGE 1972, 1973

	Nechako Lakes District		Morice-Bulkley Valley Region		Lower Skeena Valley Region		All Yellowhead Region	
	$	%	$	%	$	%	$	%
Non-Resident Canadians	59,666	8	98,334	13	179,065	23	337,065	44
Non-Canadians	141,581	18	61,570	8	233,296	30	436,447	56
All Non-Residents	201,247	26	159,904	21	412,361	53	773,512	100

TABLE 5.13

AGGREGATE NON-RESIDENT ATTRIBUTABLE EXPENDITURES
BY SUB-REGION AND SPECIES FISHED
AVERAGE 1972, 1973

Species Fished:	Nechako Lakes District		Morice-Bulkley Valley Region		Lower Skeena Valley Region		All Yellowhead Region	
	$	%	$	%	$	%	$	%
Steelhead	0	0	123,820	16	243,241	31	367,061	47
Non-Steelhead	201,247	26	36,084	5	169,120	22	406,451	53
All Species	201,247	26	159,904	21	412,361	53	773,512	100

TABLE 5.14

PRESENT DISCOUNTED VALUE OF NON-RESIDENT SPORT FISHING TO RESIDENTS OF THE YELLOWHEAD REGION* BY SUB-REGION 1972, 1973 PRICES

	$	%
Nechako Lakes District	1,342,673	31
Morice-Bulkley Valley Region	476,245	11
Lower Skeena Valley Region	2,502,066	58
All Yellowhead Region	4,320,984	100

* Discounted at 8 percent per annum to the year 1999.

TABLE 5.15

SUMMARY OF RESIDENT ANGLER EFFORT

AVERAGE 1972, 1973

Community:	Estimated Number of Active Sport Fishermen	Sport Fishermen as a Percentage of Population
	No.	%
Kitimat	2,478	21
Terrace-Thornhill	2,438	19
Prince Rupert-Port Edward	2,813	17
Prince George	4,632	14
Smithers-Telkwa-Houston	975	14
Vanderhoof-Fraser Lake-Burns Lake	557	13

eries attracted a mix of sport fishermen which was unique when defined in terms of geographic origin, socio-economic characteristics, kind of fishing and intensity of effort. It is this information which is essential for planners who attempt to project demands for recreation in this part of British Columbia when populations are increasing, access patterns are changing and the environment is being altered.

6. CONCLUSIONS AND IMPLICATIONS

The Yellowhead Region was defined for the purposes of this report as that area between Prince George and Prince Rupert easily accessible to Provincial Highway 16. The region of study thus straddles two of the major river systems of British Columbia, the Fraser and the Skeena. Three major sport fishing regions were identifed: the Nechako Lakes District, the Morice-Bulkley Valley Region and the Lower Skeena Valley Region.

In the second section of this report, the Nechako Lakes District was singled out for attention. It was shown to have a specialised trout fishery centered on Francois Lake. The Nechako Lakes District attracted large numbers of Non-Canadians and recorded about half the Non-Canadian angler-days in the Yellowhead Region. Almost half of the Non-Canadians were from California. Non-Canadians in the Nechako Lakes District proved to be the most ardent sport fishermen of all Non-Residents in the Yellowhead Region.

The Nechako Lakes District contained a well-developed, specialised sport fishing service sector. Most of the accessible lakes had fishing resorts and most of the businesses in the Yellowhead Region, dependent directly on sport fishing expenditures for their existence, were located there. However, with its large Non-Canadian expenditure component, the prosperity of the Nechako Lakes District sport fishing industry currently is vulnerable to three major threats: deterioration in sport fish stocks, provincial government attitudes towards Non-Canadian participation in British Columbia's recreational resources and continental energy shortages.

Little can be said about the state of sport fish stocks in the area since no accurate records exist. However, on Francois Lake, the key recreational lake of the area, it was generally felt that sport fishing had maintained a high quality. Closer to Prince George, however, some lakes, like Cluculz, had probably been overfished. As Prince George

continues to grow the increased pressure of Resident fishing coupled with heavy Non-Resident effort may similarly threaten Francois Lake unless appropriate management steps are taken.

There is a growing lobby in the province which wants to restrict Non-Canadian use of British Columbia's recreational resources. The author has dealt at length with the rationale and the implications of such a policy elsewhere.[1] In the case of Francois Lake, however, a few observations may be in order. There is little evidence, at least in this part of British Columbia, that conflicts either actually exist or are perceived to exist between Non-Canadian and Canadian recreationalists. Catch remains high on Francois Lake and there is no indication that Canadian use is currently restricted because of Non-Canadian particpation. This report has revealed that lake fishing is valued much more highly by Non-Canadians. Canadians over-whelmingly expressed a preference for stream fishing. In short, it is not obvious that if Non-Canadian effort were to be restricted the void created would automatically be filled by Canadian recreationalists.

In 1973, gasoline shortages caused a reduction in Non-Canadian effort in the Nechako Lakes District. Although Canadian effort increased considerably to take up any slack further west along the Yellowhead Route, this did not happen in the Nechako Lakes District. The area would thus seem to be much more vulnerable than the others surveyed to the impact of a long term continental energy crisis. The Nechako Lakes District is a highly specialised fishery catering specifically to Non-Canadian tastes. Anything which deters Non-Canadians from visiting this area would severely hurt the tourist industry.

In section three the discussion moved to the Morice-Bulkley Valley Region. The sport fishery in this area supported only half the angler effort of the Nechako Lakes District. Much of this effort was

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1 William F. Sinclair and David J. Reid, "Conflicts Among Recreational Resource Users - The Case of Non-Canadian Participation in the Regional Sport Fisheries of British Columbia and the Yukon", The Annals of Regional Science, 1974, Vol. VIII, No. 2.

concentrated on steelhead trout and salmon. In relative terms the Morice-Bulkley Valley Region supported the greatest proportion of Non-Resident angler-days. This was the only region of the Yellowhead where Non-Resident Canadians attributed more value to the sport fishery than Non-Canadians. Moreover, over half the total expenditures attributable to the sport fishery were identified with one group of sport fishermen, namely, Non-Resident Canadian steelheaders. It was established that the importance of the Morice-Bulkley system was largely associated with its unique steelhead run. This run provided a major recreational attraction for both local and Non-Resident Canadians.

The Lower Skeena Valley Region's sport fishery was discussed in section four. In comparison with its Morice-Bulkley tributary system the Skeena system below Hazelton supports a relatively large Resident fishing effort. Moreover, the relative importance of salmon and steelhead are reversed and approximately half of the total effort is on the system's chinook and coho salmon stocks. Among Non-Residents, Non-Canadians attributed greater aggregate expenditures than Non-Resident Canadians. This again differed from the pattern in the Morice-Bulkley Valley Region.

The Lower Skeena and Morice-Bulkley sport fisheries appear to be much less directly vulnerable to changes in Non-Canadian participation. Any reduction in Non-Canadian use would probably be more than offset by increased Canadian activity. In fact, a continuing continental energy shortage, if the experience of 1973 is any indication, may serve to increase Canadian angling effort at a faster rate in the future. This potential increase in Non-Resident effort, if unmanaged, might pose an indirect threat to sport fishing quality in the region. Furthermore, Resident effort on the Lower Skeena and Morice-Bulkley systems will also increase at a relatively rapid pace. The area is the focus of a government promoted, economic expansion program planned for northwestern British Columbia. New rail routes, port expansion, pulp mills, smelters, power developments and a greatly increased population base are all foreseen in the next ten years.

In a region where the lack of alternative Resident leisure time activities is well documented, the socio-economic importance of sport fishing to Residents will likely increase even further.[2] At the same time, the socio-economic importance of sport fishing to Residents is heightened by the boost given to the local economy by increasing Non-Resident participation in the sport fishery. This study has clearly indicated that a great number of Non-Resident sport fishermen visited the Yellowhead Region to participate in sport fishing. Many of these sport fishermen would not have been willing to forego their sport fishing opportunities. In other words, many sport fishermen came to northern British Columbia to fish and would not have come had sport fishing been unavailable. The spending by Non-Residents directly attributable to the existence of sport fishing in the Yellowhead Region amounted to an average of $773,512 each year. This spending translated itself into the equivalent of 70 full-time jobs.

This discussion leads to two important questions. Firstly, can the waterways of northern British Columbia sustain their major role in the planned industrialisation of the area and also maintain viable sport fish stocks? Secondly, can sport fish stocks sustain much higher levels of angling effort without depleting stocks? The present study has shown that current levels of exploitation of the salmon stocks of the region by sport fishermen are much higher than previously thought. It has also been shown that the socio-economic importance of the local sport fisheries is also much greater than previously acknowledged. In these circumstances it is clear that priority has to be given to integrating management of these resources with the total regional planning process. Further, given the haste with which regional development plans are proceeding, the priority is an urgent one. Maps have been appearing in the local press indicating dams which would perhaps result in extensive fish losses and pulp mill sites are being posited which would be incompatible with fish survival. Industrial development will lean heavily on the water resources of northern British Columbia. With proper planning increased water use for industrial

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2 William F. Sinclair, The Socio-Economic Importance of Maintaining the Quality of Recreational Resources in Northern British Columbia, Department of the Environment, Fisheries and Marine Service, Vancouver, 1974.

purposes need not be at odds with fish survival. However, a properly integrated regional plan of water development is essential. Development planners in the north should keep in mind that an environment which cannot guarantee a healthy environment for fish and other wildlife populations can hardly guarantee a healthy environment for human beings.

APPENDIX I

NOTES ON SOURCES OF DATA

1. Summer Survey of Sport Fishing Parties

A survey of sport fishermen was conducted by Fisheries Service personnel during the summers of 1972 and 1973. Interviews were conducted in four main types of location, namely on the shoreline, in campsites, in fishing lodges and at roadside picnic areas.

Table I.1 shows the average number of interviews conducted in each year by region. An average of 804 interviews per year were conducted with parties who had already fished or who were intending to fish the Yellowhead Region. A party was strictly defined as a group of people travelling in a single vehicle. A very small number of parties refused to co-operate with the survey.

Table I.2 details Resident sample size estimates for the three sport fisheries in the Yellowhead Region. Approximately 6.9 percent of Nechako Lakes District anglers, 11.7 percent of Morice-Bulkley Valley Region anglers and 3.6 percent of Lower Skeena Valley Region anglers were reached by the survey. The coverage for the entire Yellowhead Region amounted to 5.4 percent of Resident anglers.

Table I.3 shows surveyed Non-Resident sport fishing party-days (in the Yellowhead Region) as a percentage of total Non-Resident sport fishing party-days. The highest percentage return was obtained in the Morice-Bulkley Valley Region. This can probably be accounted for by the fact that it was also the smallest sport fishery. The survey is estimated to have captured 23 percent of Non-Resident Canadian and 21 percent of Non-Canadian fishing party-days in the area during the study period. In the Nechako Lakes District the sample size drops to 11 percent

TABLE I.1

AVERAGE NUMBER OF INTERVIEWS PER YEAR
IN 1972 AND 1973 BY REGION AND RESIDENCE CATEGORY

	Nechako Lakes District		Morice-Bulkley Valley Region		Lower Skeena Valley Region		Total Yellowhead Region	
	No.	%	No.	%	No.	%	No.	%
Residents of the Yellowhead Region	113	14.1	113	14.1	103	12.8	329	40.9
Non-Resident Canadians	97	12.0	69	8.6	101	12.6	267	33.2
Non-Canadians	100	12.4	36	4.5	72	9.0	208	25.9
TOTAL	310	38.5	218	27.2	276	34.4	804	100.0

TABLE I.2

SURVEYED RESIDENT ANGLERS AS A PERCENTAGE
OF TOTAL RESIDENT ANGLERS
IN THE YELLOWHEAD REGION
AVERAGE 1972, 1973

	Number of Resident Anglers Represented in Survey Average Per Year	Estimated Total Number of Resident Anglers	Surveyed Resident Anglers as Percentage of Resident Anglers
	No.	No.	%
Nechako Lakes District	365	5,321	6.9
Morice-Bulkley Valley Region	117	997	11.7
Lower Skeena Valley Region	277	7,811	3.6
TOTAL YELLOWHEAD REGION	759	14,129	5.4

TABLE I.3

SURVEYED NON-RESIDENT PARTY-DAYS AS A PERCENTAGE
OF TOTAL NON-RESIDENT PARTY-DAYS
IN THE YELLOWHEAD REGION
AVERAGE 1972, 1973

	Number of Non-Resident Party-Days Represented in Survey Average Per Year		Estimated Total Number of Non-Resident Party-Days		Surveyed Non-Resident Party-Days as Percentage of Total Party-Days	
	Non-Resident Canadians	Non-Canadians	Non-Resident Canadians	Non-Canadians	Non-Resident Canadians	Non-Canadians
	No.	No.	No.	No.	%	%
Nechako Lakes District	1,258	2,745	11,339	11,068	11	25
Morice-Bulkley Valley Region	1,139	649	5,055	3,063	23	21
Lower Skeena Valley Region	1,276	1,043	15,168	11,949	8	9

of Non-Resident Canadian and 25 percent of Non-Canadian fishing party-days. The divergence in the data is explained by the relative ease with which Non-Canadians in the Nechako Lakes District could be found. Many were camped for long periods of time at a restricted number of locations around Francois Lake. In the Lower Skeena Valley Region the summer survey captured an estimated 8 percent of Non-Resident Canadian and 9 percent of Non-Canadian sport fishing party-days.

There are many problems usually associated with this survey method. Results may be biased when leading questions are posed by an enumerator. To minimise this problem considerable time was devoted to briefing enumerators and to constructing the questionnaire. A problem which neither time nor experience can overcome completely is the bias which results because interviews conducted at fishing resorts or on the shoreline tend to reach only the more ardent fishermen. An attempt was made to reduce this bias by interviewing at locations not specifically connected with sport fishing activity, for example, at public campsites and roadside picnic stops. (See Table I.4.) These precautions plus the size of the sample involved would certainly serve to reduce any bias in the Non-Resident samples. For example, our Non-Canadian sample in the Lower Skeena Valley Region fished 49.0 percent of their Yellowhead trip-days. For the Nechako Lakes District our sample of Non-Canadians fished on 51.7 percent of their trip-days and in the Morice-Bulkley Valley Region the corresponding figure was 65.4 percent. A random sample of Non-Canadian annual licence-holders corrected for non-response bias produced a comparable figure of 60.0 percent.[1] The present survey seems, therefore, to have avoided some of the problems of non-randomness often associated with strictly shoreline surveys. The Non-Canadian sample at least does not appear to contain significantly more ardent fishermen than the general population of licence-holders. Although there are no comparable figures for our Non-Resident Canadian category, there appears unlikely to be any major survey bias in the sample.

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1 Calculated from data reported by Pearse Bowden Economic Consultants, The Value of Non-Resident Sport Fishing in British Columbia, Fish and Wildlife Branch, Victoria 1970, p. 20, Table 7.

TABLE I.4

TOTAL NUMBER OF INTERVIEWS CONDUCTED IN 1972 AND 1973 BY CATEGORY OF INTERVIEW LOCATION

Category of Interview Location	Non-Residents		Residents of the Yellowhead	
	No.	%	No.	%
Shoreline	199	21	288	44
Public Campsites	595	63	262	40
Fishing Lodges	40	4	25	4
Wilderness Campsites	60	6	40	6
Picnic Sites and Road Side	52	6	42	6
TOTAL	946	100	657	100

The vast majority of Non-Resident sport fishermen stayed in campgrounds on their Yellowhead trip, so that campground surveys yielded relatively unbiased samples of Non-Resident anglers. Similar surveys, however, could not be used to eliminate bias in Resident responses. In all the surveyed regions the Resident survey had to rely on a relatively larger number of shoreline interviews and accordingly has probably captured a relatively high number of ardent Resident fishermen. (See Table I.4.) While a northern British Columbia survey of licence-holders yielded an average of 16.2 days fishing per year,[2] the present study yielded averages of 34.5 days for Residents interviewed in the Lower Skeena Valley Region, 30.8 days in the Morice-Bulkley Valley Region and 17.0 days in the Nechako Lakes District. These figures apply to fishing activity in the Yellowhead Region alone. In the calculation of total Resident angler-days, such biases have been accounted for as much as possible with the help of outside sources. However, no effort is made to correct any bias in responses to other questions - occupation, place of residence, ranking of fishing locations, etc. - where the extent of bias cannot be expected to be serious. On the response to questions about catch, again no adjustments are made although this particular form of response bias is likely to be more important. As expounded in the text there is so little faith to be placed in such data in any case, because of a whole range of inherent biases, that there is no guarantee that correction for a bias inherent in the survey method will bring catch statistics closer to rather than further from reality.

2. Fall Steelhead Sport Fishery

The summer survey of sport fishing parties detailed above provided a picture of Resident sport fishing activity throughout the year as well as a description of the salmon and trout fishery which coincides with the major tourist influx during the summer months. For the Nechako Lakes District these data give a fairly complete account of sport fishing activity in the area. However, this is not the case in the Skeena-Bulkley

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2 Pearse Bowden Economic Consultants, The Value of Fresh Water Sport Fishing in British Columbia, Fish and Wildlife Branch, Victoria 1971, p. 21, Table 12.

system where an important steelhead fishery extends the fishing season well into the fall and attracts a large number of Non-Resident sport fishermen. A minimal amount of information could be gleaned from the summer survey of sport fishing parties on this important and highly specialised sport fishery.

A wealth of information on the steelhead fishery is provided, however, in the excellent series entitled Steelhead Harvest Analysis compiled from postcard questionnaire surveys of licenced steelhead anglers in British Columbia by the Fish and Wildlife Branch of the provincial government. This series has been published since the 1966-67 season. Anglers are distinguished by area of residence and data relating to catch and number of anglers are given for each steelhead stream in the province. In the present study an average is used of the two most recent years for which statistics are available. In the Skeena system these data are for fall 1971 and 1972 as reported in the published volumes of the Steelhead Harvest Analysis dated 1971-72 and 1972-73 respectively.

An effort was made to anticipate and eliminate the possibilities of double counting which might have arisen from the overlap in the two separate surveys.

3. Survey of Sport Fishing Related Businesses

A directory of ninety-nine businesses, which could possibly be dependent on sport fishing, was compiled. This directory excluded businesses in the peripheral urban centres of Prince George and Prince Rupert. When interviewed, the owner or manager of the establishment was asked the percentage of his business due to sport fishing, whether his business could be maintained in the absence of the sport fishery, the number of man-months employment and, in the case of lodges and resorts, an estimate of party-nights by residence category. Interviews were conducted in 1972 and the information collected was later improved and updated in 1973.

APPENDIX II

EXAMPLE OF THE QUESTIONNAIRE USED BY FISHERIES SERVICE PERSONNEL IN THE SUMMER SURVEY OF SPORT FISHING PARTIES 1972, 1973

No. _____

Date _____ Location _____

Non-Canadian _____ Non-Resident Canadian _____ Resident _____

Shoreline ____ Paid Campsite ____ Lodge ____ Wilderness Camp ____ Picnic ____

1. Place of residence _____
2. No. of people in party (party defined as one vehicle):
   Adults _____ Children 11 to 15 _____ Children 10 and Under _____
3. No. of people in party who fish _____
4. Occupation of head of household: Executive ___ Managerial ___ Retired ___
   Professional _____ Technical or Tradesman _____ Clerical or Sales _____
   Labourer _____ Self-Employed _____ Other _____
5. What is your destination? (Non-resident) _____
6. How many days will you be on this trip? _____
7. How many days will you be in Canada? (Non-resident) _____
8. How many days will you be in British Columbia? (Non-resident) _____
9. How many days have you been in the area? (Non-resident) _____
10. How many nights have you been in a public or private paid campsite in this area? (Resident - yearly) _____
11. How many more days do you plan to be in the area? (Non-resident) _____
12. How many days do you normally fish each year (anywhere)? _____
13. How many days have you fished in this area? (Resident-yearly) _____
14. How many more days do you plan to fish in this area? (Resident-yearly) ____
15. What are your average party expenditures per day in the area? _____
16. Besides fishing what other activities do you intend to participate in on this trip? Swimming ____ Hiking ____ Boating (motor) ____ Hunting _____
    Sailing _____ Picnics _____ Visiting friends and/or relatives _____
    Canoeing _____ Other _____

17. What are your reasons for coming to this area? List in order of importance:

    Friends and/or relatives ____ Scenic Beauty ____ Working in the area ____

    Fishing _____ Vacation _____ Passing through _____ Other _____

18. If there was no fishing in the area, would you have made this trip anyway? Yes _____ No _____

19. How many days do you estimate you are staying longer because there is fishing available in the area? _____

20. What type of fishing are you doing on this trip. What type do you prefer?

    Shoreline on a lake _____ _____

    Shoreline on a river _____ _____

    Boat on a lake _____ _____

    Boat on a river _____ _____

    Other _____ _____

21. What species of fish are you most interested in catching here? _____

22. What species do you most prefer to catch?

    Salmon _____ Trout _____ Steelhead _____ Other _____

23. (a) Do you plan to visit this area again this year? Yes _____ No _____

    (b) Do you plan to fish during the next visit? Yes _____ No _____

24. Were you interviewed by us in 1972? Yes _____ No _____

River, Lake or Stream	No. of Days Fished	Plans to Fish	Catch					
			Species	No.	Species	No.	Species	No.
Binta Lake	( )	____	_____	( )	_____	( )	_____	( )
Bulkley River	( )	____	_____	( )	_____	( )	_____	( )
Burns Lake	( )	____	_____	( )	_____	( )	_____	( )
etc.	( )	____	_____	( )	_____	( )	_____	( )
.	( )	____	_____	( )	_____	( )	_____	( )
.	( )	____	_____	( )	_____	( )	_____	( )
.	( )	____	_____	( )	_____	( )	_____	( )
Zymoetz (Copper) River	( )	____	_____	( )	_____	( )	_____	( )
Other (specify):								
_____	( )	____	_____	( )	_____	( )	_____	( )

APPENDIX III

METHOD ADOPTED FOR ESTIMATING TOTAL NUMBER OF PARTY-DAYS, TOTAL FISHING PARTY-DAYS TOTAL ANGLER-DAYS, ETC.

Non-Residents

Information on attendance on a month-by-month basis was made available by the Parks Branch of the British Columbia government. Data was collected at provincial parks throughout the summer season. The managements of private campsites in the Yellowhead Region provided comparable estimates of total party-days per year. Thus, it was possible to estimate the number of paid campsite nights in the area during 1972 and 1973. Regular surveys of campsites by Fisheries Service personnel provided estimates of the percentage of total parties who intended to participate in the Yellowhead Region sport fishery and also a breakdown of fishing parties according to residence category.

Non-Resident parties were asked how many nights they had stayed in the Region and the number of nights they had stayed in paid campsite accommodation. The upward bias which might be present in the latter figure because of interviews conducted in campsites themselves, was reduced because of the relatively large number of interviews (almost 33 percent) conducted at non-campsite locations. This represented, it was felt, an appropriate stratification of the sample. Enough information was available at this point to estimate for fishing parties a total number of paid campsite nights and a total number of nights stayed in other accommodations. The data was disaggregated by region and residence category.

Given the total number of fishing party-nights, averages obtained from the questionnaire were used to estimate the total number of angler-days, total catch and total expenditures by region and residence

category.

Total steelhead angler-days by stream and average catch data are provided in the Steelhead Harvest Analysis published annually by the Fish and Wildlife Branch of the provincial government. Data on steelhead fishermen, only a few of whom were interviewed in the summer survey, were aggregated with the data from the survey of sport fishermen conducted throughout the summer. Allowances were made, where appropriate, for double counting arising from overlap of the two data sources.

Residents

The method used to estimate Resident aggregates proceeded as above with some modifications. Because many Resident sport fishermen generally did not stay in campsites, relatively fewer Resident interviews were located in campsites. A bias was thus introduced into average fishing effort and catch data because of an inordinately high number of shoreline interviews. The nature of these biases is documented in Appendix I, above. The statistic for average Resident fishing days per year was therefore inferred from other sources and applied to our estimate of numbers of Resident users to yield annual Resident angling effort. For the Yellowhead Region the most appropriate statistic for Resident fishing days per year was taken to be the "northern" average taken from Pearse Bowden, The Value of Fresh Water Sport Fishing in British Columbia, Victoria, 1971, p. 21.

APPENDIX IV

CALCULATION OF NON-RESIDENT EXPENDITURES ATTRIBUTABLE TO THE YELLOWHEAD REGION SPORT FISHERY

1. Summer Survey of Sport Fishing Parties

Non-Resident angler parties interviewed in the summer sport fishing survey provided expenditure information which could be used to calculate the value of the sport fishery for salmon and trout in the Yellowhead Region. The method used is as follows:

1. All interviewed Non-Resident parties were asked to estimate average party expenditures per day in the Yellowhead Region.

2. All interviewed Non-Resident parties were asked: "If there was no fishing in the area, would you have made the trip anyway?" If the response was in the negative, then all party expenditures in the Yellowhead Region were attributed to the sport fishery.

3. Those who indicated they would have visited the Yellowhead Region regardless of the existence of sport fishing opportunities, were asked the following: "How many days do you estimate you are staying longer because there is fishing available in the area?" All party expenditures on indicated 'extra' days were then attributed directly to the sport fishery.

4. In those cases where trip length would have been unaffected by the existence or otherwise of sport fishing, no part of expenditures could be attributed to the sport fishery. The assumption is that expenditures on sport fishing activity by these parties would not have been lost but would automatically have been reallocated to other activities within the Yellowhead Region.

2. Steelhead Anglers' Expenditures

Steelhead anglers' expenditures were based on comparative costs of steelheading and general angling published in recent reports prepared

for the British Columbia government.[1] Because of the specialised nature of the fishery and according to established procedure, all steelhead angler expenditures in the region were attributed to the sport fishery.[2]

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1 Pearse Bowden Economic Consultants Ltd., op. cit., 1970, 1971.

2 Loc. cit.

APPENDIX V

CALCULATION OF THE VALUE OF INDIRECT BENEFITS ACCRUING TO THE YELLOWHEAD REGION FROM NON-RESIDENT EXPENDITURES ATTRIBUTABLE TO THE SPORT FISHERY

There are two types of benefits accruing to Yellowhead Region Residents because of the existence of the sport fishery. First of all there are the benefits accruing directly to Resident anglers because of their participation in the local sport fishery. No attempt has been made in this study to put a dollar value on these benefits although it is likely that in such a frontier region with limited alternative recreational opportunities, the direct value of the sport fishery would be very high. Residents of the Yellowhead also receive indirect benefits as a result of Non-Resident expenditures attributable to participation in the sport fishery.

The value of Non-Resident sport fishing to the local Residents of a region is usually taken to be the present value of the sum over time of net indirect benefits. Since some resources currently employed in the sport fish service sector would be automatically reallocated to other sectors at comparable rates of return in the absence of the sport fishery, the returns to such mobile resources cannot be taken as a net benefit. At the provincial level, total attributable expenditures would have to be reduced considerably (by about 85 percent) to establish a net benefit figure. However, at the level of a small region, such as the Yellowhead Region, the discrepancy between total and net indirect benefits is likely to be much smaller. This is likely to be more true in the Yellowhead Region where structural unemployment is probably a reality and where mobility of unemployed resources often means a transfer of resources to outside the region. For these reasons the value of indirect benefits created by the sport fishery in the Yellowhead Region is taken to be more closely approximated by the capitalised value of the total local income

streams generated. (See Table V.1.) In these calculations, net benefits have been discounted at a rate of 8 percent to the year 1999. The following somewhat arbitrary growth rates have been applied to participation:

1. Steelhead angler-days; no growth.
2. Non-steelhead angler-days:
   (a) associated with Non-Canadians; no growth.
   (b) associated with Non-Resident Canadians; 12 percent growth, 1974 - 1980; 5 percent growth thereafter.

TABLE V.1

VALUE TO RESIDENTS OF
NON-RESIDENT SPORT FISHING

	Non-Resident Attributable Expenditures	Local Income Component	Assumed Multiplier	Value to Residents of Non-Resident Sport Fishing
Nechako Lakes District	$201,247	$ 66,412	1.35	$1,342,673
Morice-Bulkley Valley Region	$159,904	$ 33,580	1.20	$ 476,245
Lower Skeena Valley Region	$412,361	$136,079	1.35	$2,502,066

APPENDIX VI

IMPACT OF NON RESIDENT EXPENDITURES ATTRIBUTABLE TO SPORT FISHING ON EMPLOYMENT AND INCOMES IN THE YELLOWHEAD REGION

The expenditures of Non-Residents which can be directly attributed to sport fishing provide local employment opportunities. In this report the method used to calculate the number of jobs created is similar to that used in earlier studies commissioned by the provincial government.[1] Anglers are assumed to allocate 55 percent of their trip expenditures to services including food (restaurants), lodging and fishing services. The remainder is spent in retail outlets. The most up-to-date figures available indicate that average dollar values of sales of $9,600 and $29,500 provide one man-year of employment in the service and retail sectors respectively.[2] The employment created directly by Non-Resident attributable expenditures is presented in Table VI.1, below. Subsequent rounds of spending create indirect employment. The assumptions regarding the multiplier employed and the distribution of expenditures between retail and service sectors are set out in Table VI.2. Again the earlier methodology is followed. This study utilises multiplier ranges which would be intuitively credible in relation to the regional population distribution. They also compare favourably with those figures reported in non-British Columbian case studies of small population centres.[3]

In summary, the sport fishery in the Yellowhead Region provided direct employment to the extent of 56 man-years and indirect employment through subsequent rounds of spending to the extent of 14 man-years. Of

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1 Pearse Bowden Economic Consultants Ltd., op. cit., 1970, Appendix C.

2 Canada, 1966 Census; 97-602, 97-603, 97-643, 97-647.

3 For a summary of reported results of studies on the impact of tourist expenditures, see B. H. Archer and C. B. Owen, "Towards a Tourist Regional Multiplier", Regional Studies, 1971, vol. 5, pp. 289-294. A multiplier of 1.18 has been calculated for the Bella Coola Valley Region (population 1,533) of British Columbia. See John Boland, The Importance of Fishery Resources to the Bella Coola Valley, Department of the Environment, Fisheries and Marine Service, Vancouver, 1974.

TABLE VI.1

AVERAGE ANNUAL DIRECT EMPLOYMENT (MAN-YEARS) CREATED BY NON-RESIDENT ANGLER PARTY EXPENDITURES ATTRIBUTABLE TO THE SPORT FISHERY

	Nechako Lakes District	Morice-Bulkley Valley Region	Lower Skeena Valley Region	Total Yellowhead Region
1. Attributable Expenditures ($)	201,247	159,904	412,361	773,512
2. Percentage of Expenditure Directed to				
(a) Service Sector	55%	55%	55%	55%
(b) Retail Sector	45%	45%	45%	45%
3. Average $ Value of Sales/ Employee in				
(a) Service Sector	9,600	9,600	9,600	9,600
(b) Retail Sector	29,500	29,500	29,500	29,500
4. No. of Man-Years Created in				
(a) Service Sector	12	9	24	45
(b) Retail Sector (4 = 1 x 2 ÷ 3)	3	2	6	11
Total Direct Employment (Man-Years)	15	11	30	56

TABLE VI.2

AVERAGE ANNUAL INDIRECT EMPLOYMENT (MAN-YEARS) CREATED BY NON-RESIDENT ANGLER PARTY EXPENDITURES ATTRIBUTABLE TO THE SPORT FISHERY

	Nechako Lakes District	Morice-Bulkley Valley Region	Lower Skeena Valley Region	Total Yellowhead Region
1. Attributable Expenditures ($)	201,247	159,904	412,361	773,512
2. Percentage of Expenditure Directed to				
(a) Service Sector	18%	18%	18%	18%
(b) Retail Sector	82%	82%	82%	82%
3. Employment Multiplier	1.35	1.2	1.35	1.32
4. Local Income Component (approx.)	32%	21%	32%	30%
5. Average $ Value of Sales/ Employee in				
(a) Service Sector	9,600	9,600	9,600	9,600
(b) Retail Sector	29,500	29,500	29,500	29,500
6. No. of Man-Years Created in				
(a) Service Sector	2	1	3	6
(b) Retail Sector	2	1	5	8
Total Indirect Employment (Man-Years)	4	2	8	14

this employment, 51 man-years are identified with the service sector and 19 man-years with the retail sector. A regional breakdown in reported in Table VI.3.

Finally, the total value of business revenues per year in the Yellowhead Region due to sport fishing are set out in Table VI.4. As in the case of our employment estimates, the total Yellowhead Region figure is taken to be a straight addition of its sub-regional components. No account is thus taken of sub-regional economic interdependence which would boost the multiplier in the larger region. This omission is not regarded as an important one. No account has been taken in this study of the impact of government expenditures associated with sport fish management on income and employment.

TABLE VI.3

AVERAGE ANNUAL REGIONAL EMPLOYMENT (MAN-YEARS) CREATED BY NON-RESIDENT ANGLER PARTY EXPENDITURES ATTRIBUTABLE TO THE SPORT FISHERY

Employment Created in:	Nechako Lakes District	Morice-Bulkley Valley Region	Lower Skeena Valley Region	Total Yellowhead Region
Service Sector	14	10	27	51
Retail Sector	5	3	11	19
TOTAL EMPLOYMENT	19	13	38	70

TABLE VI.4

AVERAGE ANNUAL BUSINESS REVENUES IN THE YELLOWHEAD REGION GENERATED BY NON-RESIDENT ANGLER PARTY EXPENDITURES ATTRIBUTABLE TO SPORT FISHING

	Average Annual Business Revenues $
Nechako Lakes District	281,900
Morice-Bulkley Valley Region	184,500
Lower Skeena Valley Region	583,700
TOTAL	1,050,100